

PS FOR MAKING MULTIMEDIA WORK • LATEST CD-ROMs REVIEWED

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WITH WINDOWS 95

PC WORLD

February 1995 \$4.95

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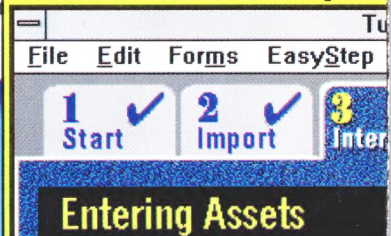
Top-Rated Network Powerhouses

30 Timesaving Tips for
Word, WordPerfect, and Ami Pro

Best Home PCs: Multimedia,
Bundled Software, and More

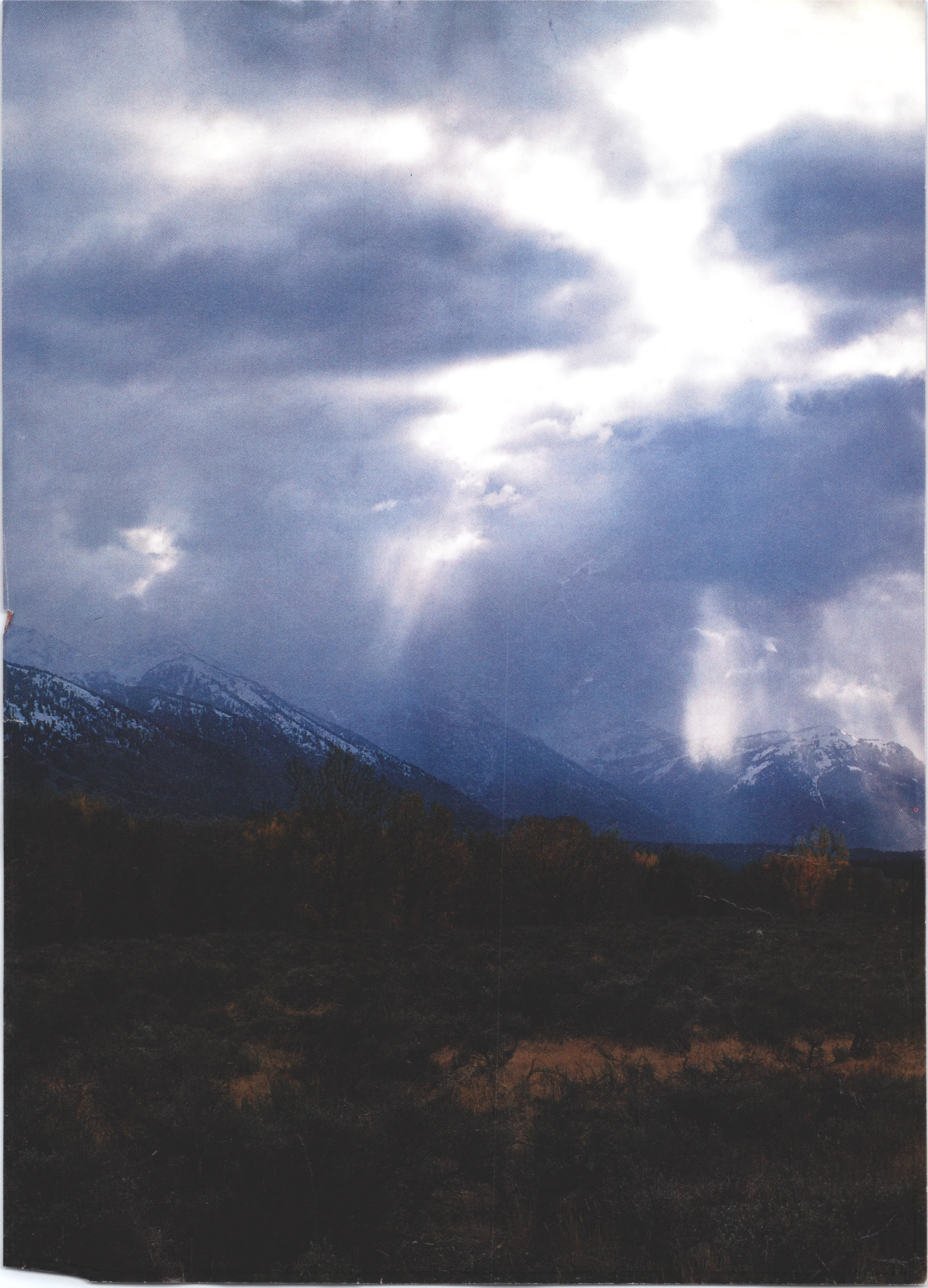


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YOU NEED.**





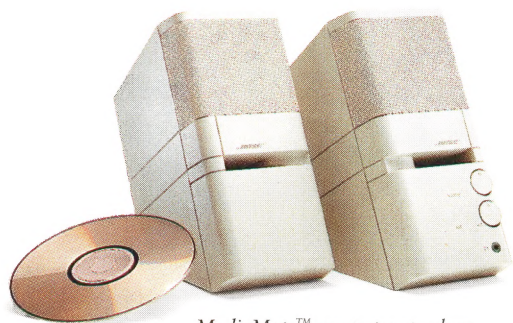
How to bring out the CD in a CD-ROM.

There is a lot more to multimedia today than meets the eye.

For one thing CD-ROM discs are being engineered with high quality sound. Which means they are meant to be HEARD as well as seen. But to experience (and fully enjoy) all their natural sound – whether it's the rumble and roar of racecars, the awesome screeches of a

prehistoric pterodactyl or the fortissimo passages of a symphony – you need speakers made by a company that really knows quality sound.

Speakers like the new MediaMate™ computer speakers by Bose®. Their compact design achieves full, lifelike sound. And with their special built-in amplifier and equalizer, they are capable of deliver-



MediaMate™ computer speakers



ing every whisper and bang in your CD-ROMs. Even at low volume you'll hear robust lows as well as sparkling highs. They were also designed to work with all multimedia hardware. Dual input allows you to hear two sources simultaneously, such as your computer plus a compact disc player or musical instrument. And, of course, MediaMate speakers are mag-

netically shielded so you can set them next to your monitor or magnetic media.

A multimedia system can be a fantastic adventure for entertainment and games, as well as a valuable tool for education, business presentations or professional MIDI applications. Multimedia is also a meaningful investment – so don't shortchange yourself on your speakers.

For more information, and the name of a dealer where you can hear an ear opening demonstration, call:

1-800-444-BOSE Ext.497.

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PC WORLD



Cover Story

128 Laser Printers: The Price Is Right

As prices dip below \$400 and quality continues to climb, *PC World* reviews 30 low-end, mid-range, and high-performance printers. Is cost a concern? We've got a best buy personal laser for \$399. Is quality critical? We recommend a workhorse with 1200-dpi resolution. Buying for a big office? Check out a 16-page-per-minute network powerhouse.

Special Report: Multimedia

115 Beating the Multimedia Blues

Singing the sad song of multimedia incompatibility? CD-ROM guru Andy Rathbone solves the most common and perplexing problems with today's dizzying array of CD-ROM drives and sound cards.

123 CD-ROMs: What's Hot, What's Not

The latest releases: Grown-ups can play a private eye in *Under a Killing Moon* while kids expand vocabularies with *My First Incredible, Amazing Dictionary*. Or learn and laugh with *Cartoon History of the Universe*.

Cover photography by Robert Cardin

Personal Finance

153 Tax Software: Many Happy Returns?

With context-related advice and links to personal finance packages, this year's class of tax software will help you figure out everything from child-care costs and capital gains to self-employment tax and home office deductions. Our reviewer checked out early bird versions of the leading programs. Here's what she found.

Word Processing

164 Slick Tricks: 80 Word Processing Tips

Tame that text table! Customize those icons, buttons, and tool bars! Launch macros with the best of them! These invaluable tips will help you make the most of Word for Windows, Ami Pro, and WordPerfect for Windows.

Home PCs

181 Home Runs: Best Family PCs

A new class of PCs targeted for your home comes with claims of idiotproof installation, cool multimedia bundles, and friendly interfaces. We tried out systems from AST, Compaq, Gateway, IBM, Micron, and Packard Bell to find out which deserves a place in your den.

Top of the News

50 Going Online With Windows 95

The Microsoft Network, an innovative online service, will be integrated into Windows 95. Microsoft's key challenge: to build compelling content.

54 PC Wear in 2005

Powerful PCs portable enough to wear.

56 Microsoft's Bob Meets Home PCs

New shell for novices offers eight apps.

60 The Easy Way to Browse the Web

Netscape's browser is fast, easy, and free.

62 Creating the PBS of the Internet

The push is on to fund community nets.

66 PC Cards: Is Plug and Play Here?

Tests show that PCMCIA finally works.



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Systems

190 Top 20 PCs: Newcomers Reach New Heights

Systems that debut this month win three out of four number one spots on our charts. And competition for Intel continues to heat up as a new AMD 80-MHz PC breaks the Top 20. This month's champs: the Micron P90PCI PowerStation, MIS Slimline 66, Compaq LTE Elite, and WinBook XP DX2/50.

Graphics Boards

231 Top 10 Windows Accelerators: STB Powergraph Sizzles

Fast, low-cost boards spark this month's Top 10 shake-up as a new entry from STB unseats the ATI Graphics Xpression board as number one.

Reliability & Service Monitor

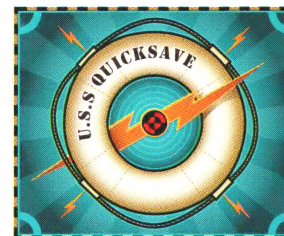
229 Win a 486DX2-66 PC

How satisfied are you with your PC? Have you had problems? Or is it trouble-free? Fill out and fax in this reliability and service survey for a chance to win an MIS Slimline 66, a Best Buy PC from this month's Top 20 charts.

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| 77 Thinking Mouse | 88 Stacker 4.0 for OS/2 & DOS | 96 Power Spanish |
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| 80 Canon BJC-600e and LBP-1260 printers | 92 CleanSweep For Windows 1.0 uninstall utility | 100 Scan-By-Fax |
| 81 Citizen PN60 printer | 92 d-Time10 1.0 CD-ROM utility | 102 ZDS CruisePad wireless terminal |
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| 86 Midisoft Presentation Partner 1.05 and SPC Harvard Spotlight 1.0 | | 106 Quick Takes |



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The ZEOS® Pantera™... **"This Is As Good As It Gets."** -PC World Best Buy, August 1994

It's true! The ZEOS Pantera is as good as it gets. Leading experts from top industry publications all agree that the ZEOS Pantera is the best PC available. Unparalleled in its field, the Pantera has continuously earned award after award—month after month (including four *PC World* Best Buys in January).

There's no desktop system that comes close to the ZEOS Pantera in performance, reliability, and value. As *PC Magazine* said: "Overall performance leaders...the Pantera line has a lot to offer—strong performance at a reasonable price, with excellent documentation."

Supreme Performance



The ZEOS Pantera, based on Intel's 486 and Pentium processors, is breaking record after record with its supreme power and awesome performance.

"Mark a new high on the performance chart!" *PC World* said the

impressive performance numbers."

What makes the Pantera blow all others away—time after time? We start with a ZEOS designed motherboard, one that is created specifically to take full advantage of the latest technological advancements. The motherboard is stocked with exceptional features such as an on-board PCI Local Bus IDE Controller and support for up to four IDE devices. For the fastest video performance, you also get a Diamond Stealth 64-bit PCI video card with 1MB DRAM *standard*.

Valuable Extras

The Pantera is a first-rate example of ZEOS' commitment to provide you with an excellent value on an award-winning machine that will increase your productivity. With all the extras, options, and 100% compatibility with all major operating systems, you can't go wrong.



Many of our most popular money-saving Pantera packages

are ready to ship *the same day you order*. We also give you the option to custom-design a system to your exact computing needs.

Either way, you can buy with confidence because of our on-going dedication to offer you high-quality features and state-of-the-art technology at an affordable price. As *PC/Computing* said: "...this is a deal you simply can't pass up."

And the value doesn't stop with your purchase. Nobody does more to support you after the sale. ZEOS has won seven *PC Magazine* Readers' Choice for Service & Reliability awards.

Unequalled in performance, reliability and value, the ZEOS Pantera "is the ultimate Power

Desktop." *PC World* added: "It's lightning fast, beautifully configured, and priced right." To get your best buy, call a ZEOS Systems Consultant today at 800-554-5220.



Pentium-66
April 12, 1994

DX4-100
June 28, 1994



Pentium-60
April 1994

Pentium-90
August 1994



486DX2-66
January 1994
February 1994
March 1994
June 1994
December 1994
January 1995

DX4-100
October 1994
November 1994
December 1994
January 1995

Pentium-60
December 1994
January 1995

Pentium-66
June 1994
July 1994
August 1994
September 1994

Pentium-90
August 1994
September 1994
October 1994
November 1994
January 1995



Pentium-66
May 1994



Pentium-66
June 1994

Pentium-90
August 1994



Pentium-90
November 1994



486DX2-66
March 1994



Package 1		Package 2		Package 3		Package 4	
486DX2-50	\$1395	486DX2-50	\$1695	486DX2-50	\$2195	486DX2-50	\$2595
486DX2-66	\$1445	486DX2-66	\$1745	486DX2-66	\$2245	486DX2-66	\$2645
DX4-100	\$1795	DX4-100	\$2095	DX4-100	\$2595	DX4-100	\$2995
Pentium-60	\$1795	Pentium-60	\$2095	Pentium-60	\$2595	Pentium-60	\$2995
Pentium-66	\$1945	Pentium-66	\$2245	Pentium-66	\$2745	Pentium-66	\$3145
Pentium-90	\$2095	Pentium-90	\$2395	Pentium-90	\$2895	Pentium-90	\$3295
Pentium-100	\$2495	Pentium-100	\$2795	Pentium-100	\$3295	Pentium-100	\$3695
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- Integrated business audio.
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Additional processors available.

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Circle 237 on reader service card

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To meet your needs exactly, we offer you power, speed and memory choices—a genuine Intel 486DX2-50 or DX4-100 microprocessor; 4 or 8MB RAM user upgradable to 20MB; and IDE hard drives from 175 to 350MB.

The Meridian includes the hottest features: high-speed local bus video for super-fast performance; a comfortable



Meridian 400 with unretouched photo of active matrix display.

palm rest; and an 84-key keyboard with inverted “T” arrow keys and an integrated TruePoint™ pointing device.

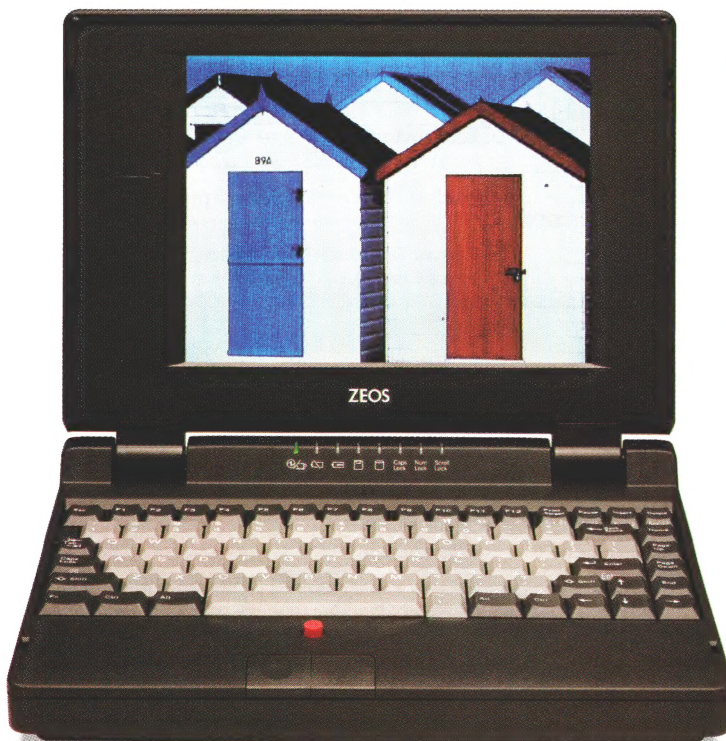
Meridian 400 Subnotebook

At just under four pounds, the ZEOS Meridian 400 subnotebook is molded from a special carbon-fiber material that cuts weight and improves durability. It offers you the perfect approach to traveling, working abroad, and second system computing. As *PC Magazine* said: “The ZEOS Meridian...pushes a subnotebook’s abilities to new heights.”

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Meridian 800 with unretouched photo of active matrix display.

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DX4-100	\$2395	\$2695	DX4-100	\$2695	\$2895	DX4-100	\$2995	\$3195
Active Matrix	400A	800A	Active Matrix	400A	800A	Active Matrix	400A	800A
486DX2-50	\$2795	\$3195	486DX2-50	\$3095	\$3395	486DX2-50	\$3395	\$3695
DX4-100	\$3095	\$3495	DX4-100	\$3395	\$3695	DX4-100	\$3695	\$3995
<ul style="list-style-type: none"> ➤ 4MB RAM ➤ 175MB IDE hard drive ➤ 800: Internal 3.5" 1.44MB floppy drive ➤ MS-DOS 6.2 			<ul style="list-style-type: none"> ➤ 4MB RAM ➤ 260MB IDE hard drive ➤ 3.5" 1.44MB floppy drive, 400: External, 800: Internal ➤ Custom carrying case ➤ MS-DOS 6.2 ➤ Microsoft Windows for Workgroups 3.11 ➤ Lotus Organizer 			<ul style="list-style-type: none"> ➤ 8MB RAM ➤ 350MB IDE hard drive ➤ 3.5" 1.44MB floppy drive, 400: External, 800: Internal ➤ Custom carrying case ➤ Extra battery ➤ MS-DOS 6.2 ➤ Microsoft Windows for Workgroups 3.11 ➤ Lotus Organizer 		

Included With Every ZEOS Meridian:



- Intel® 486DX2-50 or DX4-100 microprocessor.
- 8K (DX4: 16K) internal system cache.
- RAM expandable to 20MB.
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- Display: 640 x 480 color VGA backlit LCD, up to 256 colors. 400: 7.9" diagonal STN or active matrix. 800: 10.3" diagonal DSTN or 9.5" diagonal active matrix.
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- MS-DOS, Windows for Workgroups,
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- 15" SVGA color monitor upgrade
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- 6-bay desktop case (Pentium-66)
- 10-bay vertical case (Pentium-90)



Pentium-66 \$3318
Pentium-90 \$3468

Best MM:

- 16MB RAM, 256K SRAM cache
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- 4X CD-ROM drive, 3.5" 1.44MB FDD
- 16-bit sound card, stereo speakers
- Diamond Stealth 64-bit PCI local bus
graphics card with 2MB VRAM upgrade
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- 10-bay vertical case
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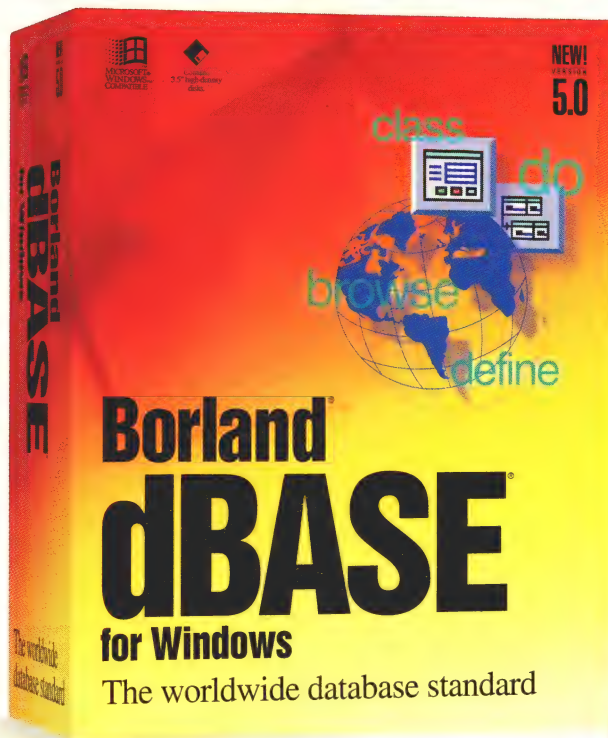
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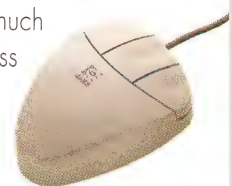


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Circle 241 on reader service card



Words and Objects: Making the Complex Simple



Advocates of component software look forward to the arrival of "objects": small, simple, task-specific miniapplications that users will be able to mix and match to perform any task imaginable. But while everyone waits for component software, a funny thing is happening. People keep using their big, supposedly extinct applications, and they use them, judging by our reader surveys, more than ever. And the more people use their mammoth spreadsheets and word processors, the more help they seem to need. *Word Processing and Spreadsheets* are among the most avidly read parts of *PC World's Here's How* section.

The conclusion is inescapable: Accustomed as we are to our word processing programs, there are still many tasks we still don't know how to make them perform. We launch Word for Windows, WordPerfect for Windows, or Ami Pro in the blind faith that somewhere inside these applications we can uncover the functions necessary for the job at hand. And then we pull down and right-click and drag and drop our way, word by word and line by line, to a rough approximation of the document that must be ready in triplicate before Federal Express goes out.

There is a better way, or to be more precise, there are at least 80 better ways. Senior editor Steve Fox and associate editor Dan Miller have collected them in "Slick Tricks From the Word Processing Pros." Whether the task at hand is shrinking a page to fit, quickly selecting the text in a column, spotting redundancies such as repeated words, or installing a configuration that places fewer demands on your hardware, you will be amazed at how easy it is to do many useful operations you've never discovered on your own. Steve and

Dan's sleuthing enables you to take advantage of some of your word processor's best features and saves you many a trip to the Help menu or the manual.

Imagining the Brave New World

Those who favor component software cite the size and complexity of major applications as a strong argument for a new approach. From the software developer's perspective, the attractions of modular reusable code are obvious. From the user's perspective, however, it is hard to picture the brave new world that awaits us after broad adoption of object-oriented operating systems and environments.

To be sure, it may be hard to extract the right functions from a contemporary word processor. But it also isn't easy to imagine choosing and using dozens or even hundreds of software components to create a complex document or report. Even if the function of each software component is self-evident, few people will be able to perform the miracle of orchestrating all the components' work. It's also unpleasant to imagine discovering just before deadline that the "smart quote" object you need is not among the components on your computer or network, so you'll have to find and buy it under maximum time pressure. With today's gargantuan word processors, you may not know exactly where to find the smart quotes, but you know that they're in there somewhere. Object software will have a hard time matching the comfort of all-inclusiveness.

Laser Printers Derail Paperless Office

Component software may turn out to be the most frequently forecast non-event since the paperless office, which is still nowhere in sight. You still need a printer to attract readers for documents that will otherwise languish on floppy

and hard disks. The PC World Test Center, our reviews editors, and contributing editor Eric Knorr have put 30 laser printers through their paces, seeking Best Buys in the categories of personal laser printer, workhorses for workgroups of five or ten users, and network printers that can blast through the work of an entire department or small company at 16 to 20 pages per minute. If you're like most of our readers, you'll need advice on choosing more than one laser printer: one for the home office you share with your spouse and children, and another for the workgroup at your company.

"Laser Printers: The Price Is Right" selects Best Buys in each category—and does much more. The article draws upon our reviewers' hands-on experi-

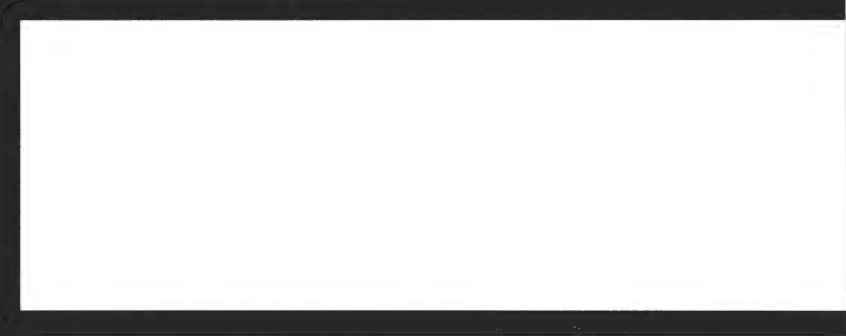
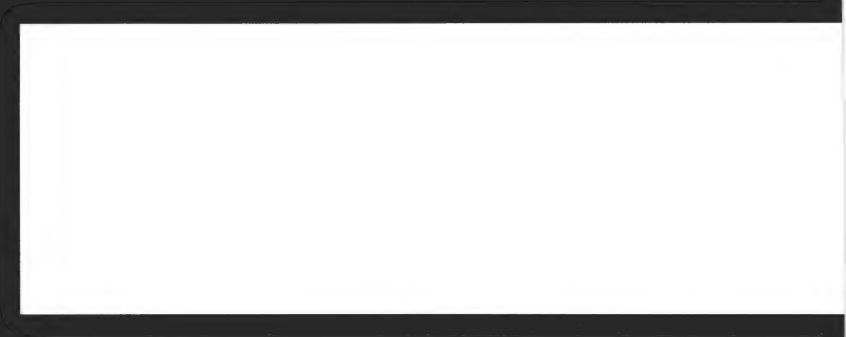
Advocates of component software cite the complexity of major applications as a strong argument for a new approach.

ence with these machines, measures real print speeds with real applications (as opposed to the optimal pages per minute claimed for most printers), and discusses whether and when PostScript is necessary. The review also rates print quality in terms of how good Windows documents look in the judgment of expert human eyes.

The overall result is a quick, clear, commonsense introduction to finding the best laser printer values today. With prices for some personal lasers dropping below \$400, and the footprints of laser printers shrinking steadily, this is an ideal time to improve the quality of printing in your home or office.

Phil Lemmons

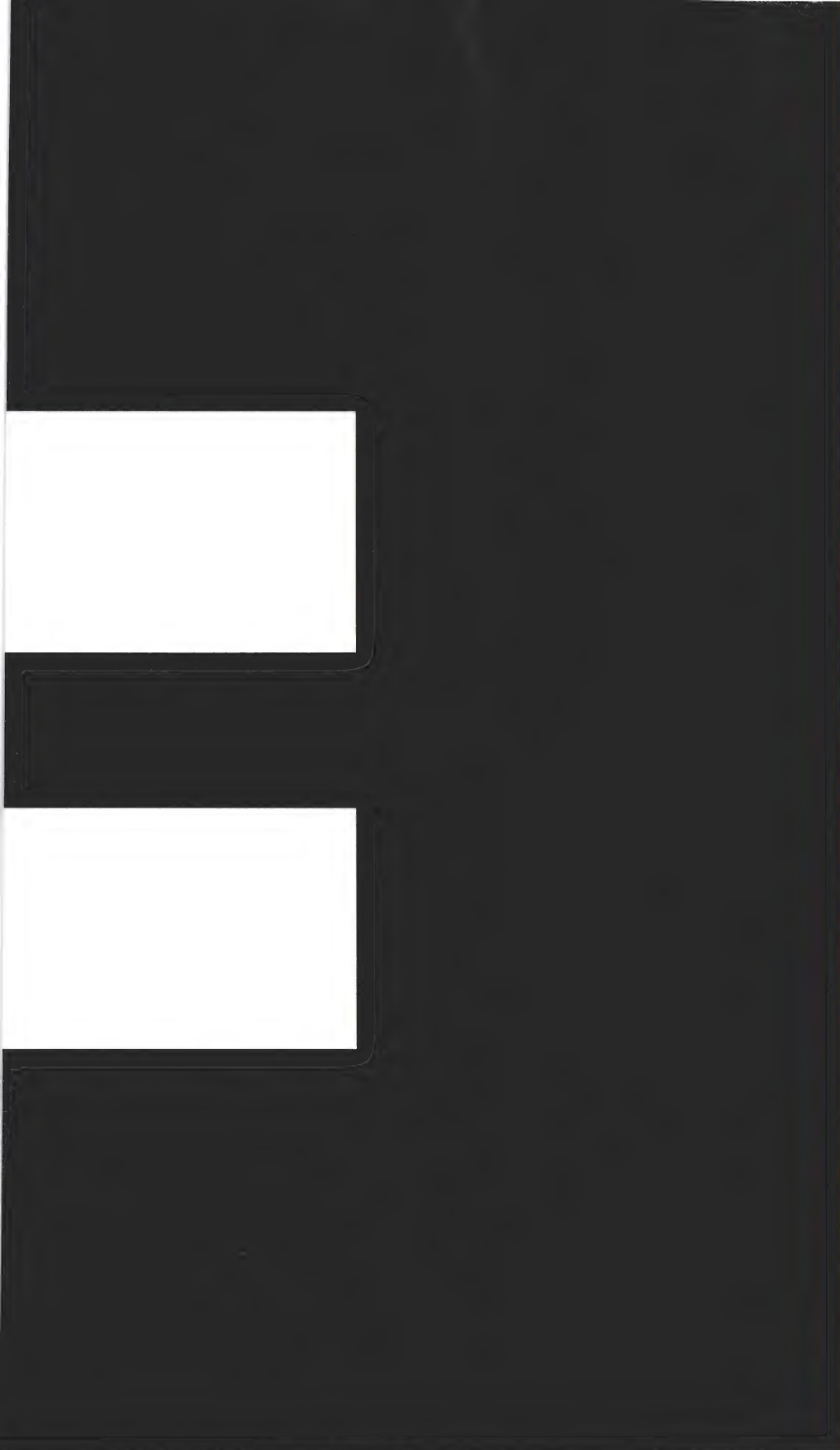
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Circle 47 on reader service card

Turbocharged Tips, Microsoft Fans Fight Back

Treasure Chest of Tips

I read a lot of computer magazines, but Scott Spanbauer's "Tips to Supercharge Windows" [December] is the single most useful article I've seen in a long time. Thanks to his tips, I've improved my systems at home and at work. I also enjoyed December's CD-ROM section and hope that CD-ROM reviews will become a regular feature.

Paul Baker, Madison, Wisconsin

NT, Here and Now

Pardon my frustration, but I don't understand why everyone is so down on Bill Gates. The guy has brought the world into the computer age. I just upgraded from Windows NT 3.1 to the 3.5 Server Edition, which runs on a 12MB or a 120MB machine. It's what everyone wants Windows to be.

I am no information-services guy, but I set up the whole system myself. My family has tried everything imaginable to crash it, without success.

What I can't figure out is why everyone is reviewing Windows 95 when the real thing is here and now. When I ask people, Why not NT?, they act like I'm nuts; they respond that NT is for networks with 1000 machines. Meanwhile, they use 16MB systems and complain about Windows 3.11's shortcomings.

Put simply, wouldn't you like a version of Windows that you don't have to reboot constantly; that never crashes; that you can configure for multiple users with separate, user-definable environments; that runs faster than 3.11; that permits long file names; that has built-in networking and Internet support; that uses RAM efficiently; and that has no 640K barrier? It's the answer to everyone's dreams.

Mike Rogers, Internet

The Green Monster

There are always people who hate extremely successful people, places, and things. Microsoft is getting a double

dose of this attitude. Its success is based on the fact that it produces excellent software. It is striving to be the best it can be, and the results are abundantly available for all to see. A few years ago, IBM occupied the same hated position Microsoft now holds. Although IBM deserved some of the criticism that was heaped upon it, Microsoft doesn't.

IBM has made some incredibly stupid moves over the last few years and has lost billions of dollars as a result. The company is finally starting to improve—for example, its notebooks have become top-notch. However, it still can't get its software people in gear. IBM continues to pour money into OS/2, which will never gain market share.

Another stupid move by IBM is its involvement in the PowerPC chip venture with Motorola and Apple Computer. That chip is not going to present much of a challenge to Intel CPU architecture. It won't run Windows properly—something akin to an audio equipment company designing new stereo systems that won't play compact discs.

Thomas R. Wiles, Newville, Pennsylvania

GUI Guru

I really enjoyed the perspective *Macworld* editor Galen Gruman gave to the subject of interfaces in "About Face" [November]. It's great that you got someone who does not dwell completely within the PC realm to analyze the future of the graphical user interface. As a user of both UNIX workstations and PCs, I see many trends and technologies trickle from the former to the latter. But all too often, PC users can't pull their heads out of DOS and

Windows to see such trends coming.

You don't have to venture far into other platforms to find ideas like proportional scroll bars and 3-D graphics library support. They've existed for years but have only recently appeared in the PC arena. Just because we work in a PC world doesn't mean we have to be ignorant of what goes on elsewhere.

John Donovan, Newcastle, California



Preloading Pitfalls

I read with interest the letter "No Disks, No Sale" in the November issue. In addition to being inconvenient, PCs that are sold with preinstalled software but no disks may contain pirated software. Is there a giant room somewhere full of those disks?

I am aware that companies buy rights to preload copies of software and to use master disks. But as the letter said, do not buy a system unless you get the original disks and licenses.

John J. Straumann, Computer Engineering, University of San Francisco

Tip Critique

In your October issue, the San Francisco PC Users Group offered a tip about using COMMAND.COM's /F switch to make DOS respond automatically with an answer of 'F' to the 'Abort, Retry, Fail?' message [page 279]. 'F' is rarely the proper response to that ques-



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tion, and the error message shows up for a reason—to alert you to a problem. Without the pause following that warning, it is easy for a batch file to scroll the message off the screen before you see the warning. Missing the warning can easily lead to data loss.

Even for the few people for whom COMMAND /F is a good idea, the method described for implementing it was faulty. The tip said that if you don't already have a SHELL command in CONFIG.SYS, then you should add one that says SHELL=d:\dir\COMMAND.COM /F. Anytime a SHELL command is used to load COMMAND.COM, it must have the /P switch, along with whatever other switches you want to use. If it doesn't, AUTOEXEC.BAT will not run, and more important, COMMAND.COM will not load as the permanent command interpreter. Which means that typing 'exit' at the primary shell's prompt (the usual method of reminding you that you're in a secondary command shell) causes the command interpreter to exit. This is the functional equivalent of having a hung computer—except in

DOS 6.0 or later, which asks you where to find the command interpreter.

Kari Jackson, Omaha

Editor's response: While we appreciate the effort the San Francisco PC Users Group put into their submission, we must admit that Jackson has a point. She is correct that the SHELL command should have the /P switch to ensure that COMMAND.COM /F is loaded as the permanent command interpreter and that AUTOEXEC.BAT runs.

However, the tip is still useful in the context in which it was given: The /F switch makes sense if you most often encounter the 'Abort, Retry, Fail?' message when you try to access a floppy drive that holds no disk. If, as Jackson suggests, you run batch files that might trigger this error, alerting you to a problem, you should not use /F.
—Shane Rau

Don't Knock Ease of Use

In "Mac Attack" [*Letters*, November], Darrell Holloway said the Mac limits his options. I've used Macs for more than a

decade, and I have never felt limited—except with regard to their price. Price motivated me to buy my first PC.

However, I still retain some of my Mac heritage. The Mac revolutionized the way society looks at computers. The ubiquity of PCs in homes and businesses can be attributed as much to the Mac as to the variety (and low cost) of Windows-based machines.

Don't criticize the Mac for being easy to use. Holloway probably also bemoans the fact that modern automobiles don't break down often enough. Perhaps he and other pompous PC users should be in a computer-theme rest home telling DOS stories about the good old days—days that many of us would rather forget.

*Richard M. Chernoff,
Fair Lawn, New Jersey*

Dicey Decimals, Part II

In a world where access time is measured in nanoseconds, transfer rates in megabytes per second, and memory capacity in gigabytes and terabytes, it's sometimes hard to keep the decimal in the right place. ►

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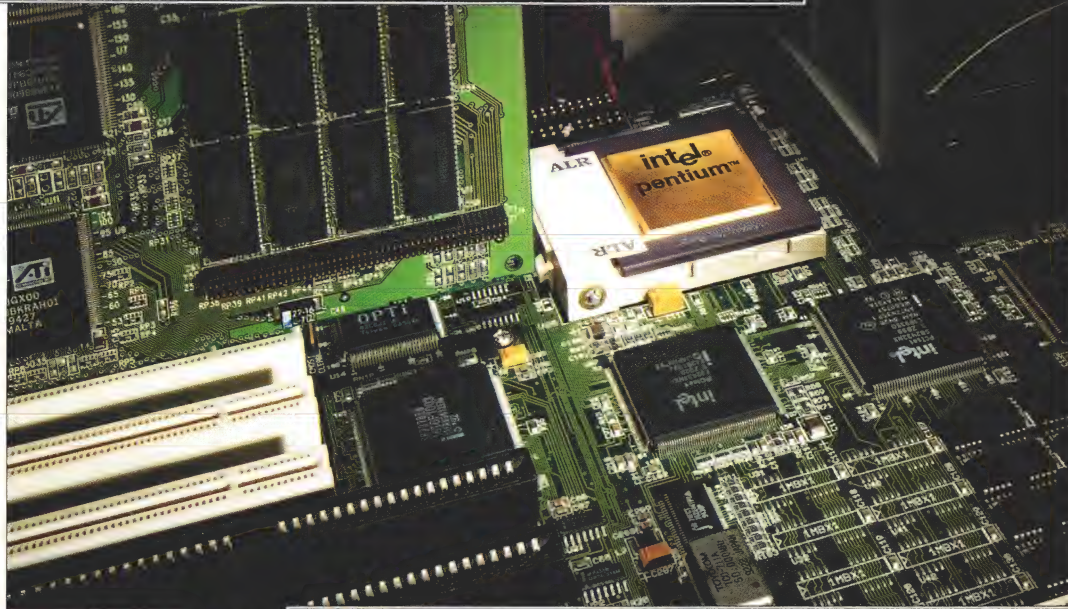
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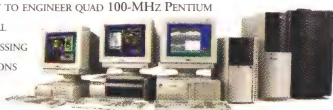
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Circle 9 on reader service card



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In October *Letters*, James Finger said something in regard to a misplaced decimal point that made me wonder if he was one of the programmers assigned to MS-DOS 4.0 ["Decimals Gone Wrong"].

"Shotgun gauges are determined by the number of equal-size spheres that can be made from a pound of lead and fired from a similar-size barrel," he noted. "Twelve balls the size of a 12-gauge bore would equal a pound of lead." He then explained that a .12-gauge shotgun would fire a bullet about two-thirds the size of a BB.

However, if 12 balls can be made for a 12-gauge rifle from a pound of lead, it would require 8½ pounds of lead to create just one ball for a .12-gauge shotgun, since only .12 (one-eighth) of a ball could be created from a pound of lead!

Reggie Thomas, Punta Gorda, Florida

Quick-and-Dirty Reports

I really enjoyed the comprehensive reviews of the top CD-ROM software titles in the December issue ["Best CDs of '94: Gifts on a Silver Platter"]. It gave me an urge to return several Christmas gifts I had purchased for friends and family and buy CD titles for them instead. Some time back I bought Toolworks' Multimedia Encyclopedia for Windows 1.5 for my children to use for school reports. I am pleased with the product except for one thing. It seems its authors ensured that there is no easy way to copy pictures into a report. With a computer-based encyclopedia you can copy and edit text for reports, using a word processor. Why should we still have to draw the pictures by hand?

*David R. Johnson,
Pine Bluff, Arkansas*

Corrections and Clarifications

Users of MS-DOS 6.0, 6.2, and 6.21 can't obtain the MS-DOS 6.22 Step-Up upgrade package free from Microsoft's customer service department (800/777-3320) as was reported in December's *Tip of the Month*; the charge through this department is \$14.95 plus shipping. Users can obtain the upgrade free via Microsoft's download service (206/936-6735) and its CompuServe forum (**G0 MSDOS62**).

Letters welcomes your responses and ideas (see page 12 for contact information).

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Energy Star PCs: Once More, With Feeling



Remember the Energy Star program? It was inaugurated two years ago by the Environmental Protection Agency (EPA), amid considerable hoopla from the press and the PC industry. "Green" PCs were all the rage—dozens of companies pledged to include energy-saving features in their entire line. At last, it seemed, the PC industry—and PC users—were going green.

But it didn't happen—at least not the way everyone expected.

Faltering First Steps

Despite the compelling environmental and economic reasons for buying Energy Star-compliant computers and peripherals, customers haven't been lining up to get them. As a result, few companies have fully integrated the capabilities into their product lines or have really marketed their Energy Star ratings. The lukewarm response, combined with some technical glitches in power management features, have prompted the EPA to launch phase two of the program. The focus: building customer awareness and clarifying compliance guidelines for PC makers.

"It's all supply and demand," says Linda Latham, director of Energy Star programs for the EPA. Computer manufacturers don't perceive a demand, so they don't make a strong effort to promote energy-efficient products or incorporate the features.

Interested buyers may have a hard time finding an energy-efficient PC. Flipping through the pages of *PC World*, you'll spot the Energy Star logo in numerous desktop and notebook ads, as well as ads for printers and monitors. But you can't always tell which products

have earned the rating—usually the logo is just one of several icons tucked between the Intel Inside logo and the magazine awards. Fortunately, you don't have to rely on the ads for all your information—you can get a complete list of Energy Star products from the EPA. Call 203/233-9114 if you want a copy mailed to you; an abbreviated list by type and manufacturer is available via fax. Call 202/233-9659; you can select the information you want from a list of options.

Oops, We Forgot to Set the Switch

During the first full year of the program, the EPA estimates that 40 percent of all computers sold carried the Energy Star logo. But it turns out that only 10 percent of all those PCs are preset to go to sleep when not in use.

"Right now many of the Energy Star systems never go to sleep," says Latham, "unless the buyer figures out how to activate the functions." That's not always easy. Sometimes the functions are buried in the BIOS, and even if you wanted to activate them, you couldn't.

To combat this problem, the EPA has

updated its Energy Star guidelines to make automatic sleep the default. PC makers have until October 1995 to comply. That seems like a long time, but Latham says companies wanted the time to figure out how to notify new PC owners of the power management feature: "They were worried that customers would walk away from their computer, come back and find the screen blank, and think it was broken or the power went out."

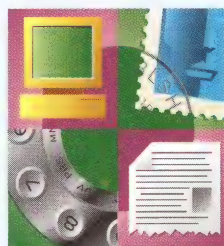
The revised guidelines also try to combat a communication problem between Energy Star PCs and monitors that keeps the PC from activating the sleep feature. In the future, PC makers will have to include a specification for controlling a monitor's power management. Most PC companies are likely to comply with the Video Electronic Standards Association's specifications.

Energy Star: Ask for It by Name

The EPA's officials recognize that their biggest challenge is getting PC buyers to make Energy Star compliance a must-have when shopping for a new computer. Right now, they acknowl-

Last November, The Computer Museum in Boston opened a permanent exhibit, "The Networked Planet: Traveling the Information Highway." Visitors get a guided tour of the information superhighway, including a computer-animated trip through a phone line to observe how electronic mail, fax, and cellular calls travel to their destinations. If you can't make it to Boston, you can sample some of the tour via the Internet (using the URL, you enter <http://www.net.org>). The Computer Museum (617/423-6758) ... **Unhappy owners of Doom II prerelease copies** filed a class action lawsuit last October in the New

KEEPING UP



Haven, Connecticut, Superior Court against Good Times Home Video and id Software, the game's distributor and developer, respectively. The suit alleges that prerelease buyers were offered early copies in August at a "special" price of \$48.90 but did not receive the game until it showed up in retail stores in

October, selling at an average price of \$39. Plaintiffs want to get a full refund plus expenses and interest in exchange for their copies of *Doom II*, or to be awarded damages for overpayment. In November, id and Good Times reportedly sent a letter offering a refund to prerelease buyers.

By Roberta Furger

edge, it's pretty low on the checklist.

"We don't expect it to be a priority," says Jeff Webb, the EPA's program manager for Energy Star computers. "But if you've narrowed your choices down to two PCs and one PC is Energy Star-compliant and one isn't, we want to convince people to buy the Energy Star PC."

When you think about it, there's no reason *not* to buy an energy-efficient PC. They don't cost any more than less efficient computers, plus they save you money and conserve our natural resources. So what are you waiting for? Look for the Energy Star logo next time you're shopping for a new PC.

Shop Talk

Getting Through to Packard Bell

Last July I contacted Packard Bell because of a floppy drive failure in my notebook. A representative told me to return the notebook even though it was still covered under the one-year on-site warranty. Customer service told me that once they received my old notebook, they would replace it with

another unit of the same configuration.

After waiting over three weeks, I tried to contact Packard Bell. It was almost impossible to reach the company at its toll-free number, and I was forced to use the toll line. When I got through, the customer service representative said Packard Bell had no record of receiving the defective notebook, and I should contact UPS. I did so and found that Packard Bell had received the notebook four days after I sent it. Packard Bell still has no record of having received the computer, so I'm still waiting to get it back. The long-distance charges alone would have paid for the floppy drive repairs, and any local computer repairer could have fixed it within a few days.

John E. Waldmer, Mound City, Kansas

Editor's note: Waldmer's was one of 24 complaints we've received in the last 12 months about difficulty getting through to Packard Bell and resolving problems.

In the past, *Consumer Watch* has had a hard time getting Packard Bell representatives to take care of problems we brought to their attention. Recently, however, the com-

pany began to respond to our inquiries. We forwarded Waldmer's letter to Packard Bell, and a representative contacted him to say the laptop was out of stock but the company would send a better model.

The rep said that to regain customer confidence after an earthquake damaged the company's facilities over a year ago, Packard Bell has opened a new technical support facility in Salt Lake City. (And in fact the number of complaints to *Consumer Watch* has dropped off recently.) He also offered some alternatives for contacting the company: 24-hour hardware support, 800/733-4411; software support, 801/579-0161; hardware and software support fax, 801/579-0092; customer service, 801/579-0160 and 801/579-0093 (fax); and the Packard Bell BBS, 801/250-1600. You can also reach Packard Bell on Prodigy and CompuServe.

I Paid for an Empty Box

In August 1994 I ordered the CorelDraw 4.0 upgrade from ComputAbility. In a few days the package arrived. I opened it to find a ragged software box with loose shrink-

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*Requires Microsoft Word for Windows 6.0/2.0 or WordPerfect for Windows 6.0a or 6.1.
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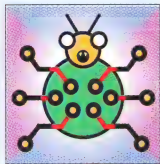
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BUG WATCH



QEMM, Caviar, and Windows' 32-bit Disk Access

If you use the 32-bit Disk Access feature in versions 3.1 and later of Windows or Windows for Work-

groups with Quarterdeck QEMM's Stealth ROM feature and a Western Digital AC2540 Caviar or similar Western Digital hard disk, you may get an error message saying Windows' 32-bit disk driver can't be loaded. To fix the problem, Quarterdeck released a driver, 32BDAFIX.SYS, that uses only 16 bytes of upper memory. You can find the driver and installation instructions in the file 32BDA.ZIP in Quarterdeck's CompuServe forum ([GO QUARTERDECK](#)).

A source at Western Digital says version 2.6 of its 32-bit disk driver, in beta testing as this column went to press, fixes the problem and solves another BIOS conflict that can prevent memory managers like QEMM from extending conventional memory beyond 640K into the video RAM area. Western Digital plans to make the driver available on new support forums on CompuServe ([GO WDC](#)), America Online, and Microsoft's Marvel (the keyword for the latter two is [WDC](#)). Internet-enabled readers will also find the file on Western Digital's anonymous ftp and Web sites at [ftp.wdc.com](#) and [www.wdc.com](#), respectively.

• Western Digital Technical Support; 800/568-9272

CorelDraw 5

Corel is shipping registered users a maintenance release of CorelDraw 5 that incorporates nearly 100 bug fixes and feature improvements to CorelDraw and the bundled Photo Paint, Chart, Move, Show, Trace, and Mosaic utilities. A few key fixes in

CorelDraw 5 E2 include reduced file sizes, faster opening of files containing artistic text, correct filling of multipath text characters, and the elimination of problems rotating, previewing, and printing bit maps.

The upgrade also includes the Corel Ventura 5 desktop publishing program—a part of the suite that wasn't completed by the May 1994 ship date. For the update, registered users can mail in the yellow Corel Ventura 5 coupon included with Ventura-less versions of CorelDraw 5. If you've sent it but haven't received your update, call Corel's toll-free status line.

• Corel Systems; 800/772-6735 United States, 800/394-3729 Canada

Toshiba T3400

Toshiba America Information Systems' computer systems division reports a timing error in the keyboard controller chip in a small number of T3400 portable systems using BIOS versions older than 1.2. The error can result in random dropped characters during high-speed typing. If you have experienced such an error, contact an authorized Toshiba dealer. According to Toshiba, dealers with replacement system boards in stock can make the repair while you wait (my local dealer reported a two-day turnaround on repairs). For the nearest authorized dealer, call Toshiba.

• Toshiba Computer Systems Division; 800/334-3445

—Scott Spanbauer

Scott Spanbauer is a contributing editor for PC World. Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and report on those with the broadest interest. Due to the volume of queries, we may not be able to return your call, and we cannot provide technical support.

wrap. Inside there was no software, no serial number—nothing. I was pretty mad, so I called ComputAbility. The salesperson told me to write a letter stating what had happened and return the package for a new upgrade. I asked if ComputAbility would pay for return shipping, and she said no.

I called Corel to explain the situation, but the representative told me ComputAbility

would have to take the package back. So I tried that company again. ComputAbility pointed the finger back at Corel. Frustrated, I called Corel again. The person I talked to this time said she would send me new software, but unfortunately it was out of stock and would take two to three weeks to arrive. I'd had enough. I called ComputAbility to say I wanted to return the pack-

age and have the charge taken off my Visa.

No one has called me back. I'm stuck with a \$135 charge on my credit card and a dirty box that once held CorelDraw 4.0.

Thomas Hall, Chesnee, South Carolina

Editor's note: According to a ComputAbility representative, if Hall had written a letter stating he got a damaged, empty package, the company would have replaced his order within 24 hours. Since Hall didn't ship the package back, ComputAbility could only guess how a package shipped without software. The representative could not explain why Hall believed he would have to pay for shipping; he also told us that ComputAbility has a strong relationship with Corel, from whom it buys its software. Corel tells us ComputAbility is not a direct distributor, though Corel representatives have had a good relationship with the company. Corel replaced Hall's software.

If you are having difficulty with a distributor, a Corel representative advised calling the Corel order line, 800/772-6735; if the staff can't help or if an item is out of stock (as happened in Hall's case), call the corporate offices at 613/728-8200 and ask for customer service.

Making Good From Bad

I purchased a computer from Micron based on a recommendation in June's "Your New PC: DOA or Destined for Glory?" in *PC World*. After I received it, I had trouble getting the sound card to work. When I called technical support, my call was answered promptly. After going through numerous steps, the technician determined that the sound card was bad and gave me instructions on returning the defective part. I received replacement parts the next day.

Although the article reported a fairly high problem rate for Micron systems, Micron was one of the best at resolving problems. That's what convinced me to go with this system. I'm glad I did.

George Barns, Carbondale, Colorado

Shop Talk is written and researched by PC World Associate Editor Christina Wood with assistance from Reader Liaison Peggy Nauts. Think you've gotten a raw deal—or a great one? Consumer Watch wants to hear the details. We'll investigate complaints and publish those letters with the broadest interest (see page 12 for contact information).

**Does the P5-100XL
cause a family feud?**

**Will the P5-75
Family PC come
between Julia
and Trevor?**

*As the
Hard Drive
Turns*

Sponsored by
 **GATEWAY2000**

**Will Simone try
to make the
4DX2-66
vanish with
wrinkle cream?**



**Furs pictured are made from artificial materials.*

Setting: Lawyer's Office

Characters:

Jonathan Mattison: Lawyer

Kiki: Young widow of the deceased

Anna: Evil daughter of the deceased

Richard: Anna's wimpy husband

Victor: The deceased

**Featured Gateway 2000 PC:
P5-100XL with 1GB hard
drive, quad-speed CD-ROM
and 17" Vivitron color
monitor.**

We now resume our story already in progress. Victor's family has gathered for the reading of his will. While vacationing on the island of Maltase with his lovely bride Kiki, Victor slipped on the rocks and plummeted over a cliff. His body never found, Anna, Victor's power-hungry daughter, greedily bribed Mattison to read the will.

Anna: Could we get on with it? I have a 1 o'clock appointment with my plastic surgeon and I don't intend to be late.

Mr. Mattison reads the will: "I, Victor Robinson, being of sound mind and body, do hereby bequeath my Gateway 2000® P5-100XL to a woman who is very close to me. This PC's super-powered Pentium™ processor, 16MB of RAM, quad-speed CD-ROM and whopping 1GB hard drive have served me well. I successfully kept two sets of books for the sawmill with this powerful PC. With Microsoft® PowerPoint® presentation graphics program, just one of the applications in Microsoft Office Professional, and the 17-inch Vivitron™ color monitor, I created amazing slide show presentations and lured many investors into my business schemes. Because the P5-100XL is my most prized possession, it's my request that it be given to my young and spirited wife Kiki. I know she loves to dance to the heart-pounding stereo sound from the ACS-31 speakers. Kiki, at \$4,299 the P5-100XL from Gateway 2000 is the best value in the PC industry. Please treat it well."

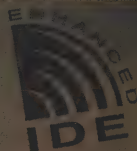
Anna: What?! I was supposed to get that system. Not that child! I've had my eyes on that P5-100XL since the day Daddy ordered it from Gateway 2000. It's Intel® 100MHz Pentium™ processor is the fastest processor available today that can still run the most popular software applications. It should be mine, not that little gold digger's! Richard! Don't be a spineless jellyfish! Make them give me the PC!

Mattison: Oh, wait Anna, here's something for you. "To my dear Anna, I leave my Yorkshire terrier, Fifi. Remember, it's a dog's life."

Anna: AAAUUUGGGHHH!

Fifi: Ruff.

Join us next month for "As The Hard Drive Turns." Will Anna seek revenge against Kiki? Will Anna and Fifi be compatible?



GATEWAY2000

"You've got a friend in the business."®

8 0 0 - 8 4 6 - 2 0 6 5

Setting: Collapsed Office Building

Characters:

Julia: Successful Realtor

Trevor: Sexy construction worker

**Featured
Gateway 2000 PC:
The P5-75 Family PC multimedia system
with 16-bit sound card and Altec
speakers, TelePath II 14.4K fax/
modem and six exciting Microsoft
software applications.**

Trevor met Julia every afternoon in her office. Since she's married to the contractor who oversees Trevor's construction crew, it's the only way they can continue their torrid affair. But now they are trapped in her collapsed office after Mt. Eruptus exploded into a volcano causing an earthquake measuring 7.1 on the Richter scale.

Julia: Oh, Trevor, what are we going to do. I can't die! I just spent thousands of dollars on fertility treatments so we can conceive our love child after my fortieth birthday party tonight!

Trevor: Let me get this tourniquet on my severely broken arm and then I will use my brute strength to save us.

Julia: Trevor, look! There's my Gateway 2000® P5-75 Family PC™ multimedia system underneath the rubble.

Trevor: Wow! I may look like your average, sexy, suntanned, hunk construction worker, but I love PCs. You know this P5-75 Family PC multimedia system is a lot like me. It has a powerful Pentium™ processor, a massive 730MB hard drive and a 15-inch Vivitron™ monitor for stunning color images. This P5-75 will give us all the PC power we'll need for years to come. And at only \$2,499, it's a great value.

Julia: Yes, and the brawn and raw vigor of this PC also reminds me of you. I can run tons of applications simultaneously. The double-speed CD-ROM, 16-bit sound card and Altec speakers give me amazing multimedia capabilities. And with the fax/modem I can order sexy little numbers from Elizabeth's Enigma for our trysts.

Trevor: That's it! We'll call the Emergency Headquarters with the modem and let them know we're here.

Julia: Oh Trevor! Do we have to? That plaster in your hair is lighting my flames of passion.

Trevor: We'll have plenty of time for love while we wait for the emergency crew. Look at this cool software. I'll use Microsoft® Works to write a letter to Mom and then I'll hit the links with MS Golf.

Julia: Trevor! What about me? This is our window of opportunity for conception!

Trevor: Just a second dear. Look at this ...

What was Julia going to do? She couldn't lose Trevor to a PC! How humiliating! Sure it's younger and faster, but does it love Trevor like she does?"

Join us next month for "As The Hard Drive Turns." Will Julia and Trevor conceive before they're rescued? Will Trevor leave Julia for his new love — Bob?



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pentium
PROCESSOR





All soap opera stars portrayed by Gateway 2000 employees.

Featured Gateway 2000 PC:
4DX2-66 Family PC multimedia
system with a double-speed CD-ROM,
16-bit sound card and Altec
speakers, MS Works, Encarta '95,
MS Money, Cinemania,
MS Golf and Fine Artist.

Setting: A fancy living room in a
stately home.

Characters:

Dirk: A debonair businessman

Simone: An emotionally distraught woman

Simone: Oh Dirk, I can't stand it! Our 4DX2-66 Family PC™ multimedia system from Gateway 2000® is taking over our home. It organizes the family schedule down to Jimmy's flights to Paris to see his real mother, and Sally loses all sense of time when she uses Microsoft® Fine Artist. Why only last week she was six and now she's sixteen. The family has no need for me!

Dirk: That's not true Simone. Didn't I profess my love for you by purchasing another city block of Gateville even though you're carrying my brother Rock's baby? Don't I stand by you through your bouts of schizophrenia when you think you are your sister Cheryl? The 4DX2-66 Family PC multimedia system is a productivity tool. We can use MS Money to track your pregnancy expenses so Rock will have an itemized bill, and the children can use MS Encarta™ for their homework. And most importantly we can track your daily medication with the spreadsheet and database in MS Works. Remember last year when you got your prescriptions confused. We don't want you handing out May baskets to the neighbors in nothing but your birthday suit again, now do we? Remember, this family's reputation is at stake here.

Simone: Oh Dirk, you're so good to me. I should've known you're only concerned with my well-being. The 4DX2-66 Family PC multimedia system has everything we need for multimedia including PCI graphics, double-speed CD-ROM drive, 16-bit sound card and Altec speakers. And at \$1,899, we have plenty of money left for that experimental wrinkle cream I want to try!

Dirk: Yes, Simone, Gateway's 4DX2-66 is a wonderful addition to our family. We get a 30-day money-back guarantee and a three-year warranty on parts for our desktop PC and Gateway monitor. Gateway's friendly employees will provide us with technical support for the life of our PC. On-site service is available during the first year in most U.S. locations and may be provided without charge if their technicians determine it's necessary. They'll even send us a free written copy of their warranty if we request it.

Simone: Marvelous! Catch me Dirk. I love this Gateway PC so much I'm feeling faint!

Join us next month for "As The Hard Drive Turns." Will Simone hit her head on the coffee table and start to think that the Gateway 4DX2-66 is her long lost brother Charlie?



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- MS Works, Encarta '95, Money, Cinemania '95, Fine Artist & Golf
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P5-75 FAMILY PC

- Intel 75MHz Pentium Processor*
- 8MB RAM, 256KB Cache
- 730MB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- Double-Speed CD-ROM
- 16-Bit Sound Card & Altec Speakers
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P5-90 FAMILY PC

- Intel 90MHz Pentium Processor*
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- 1GB 10ms IDE Hard Drive
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Professional Systems

4DX2-66

- Intel 66MHz 486DX2 CPU*
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- Local Bus Graphics with 1MB
- Double-Speed CD-ROM
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- 14" Color SVGA Monitor
- Mini Desktop Case
- 101-Key Keyboard & Mouse
- MS-DOS 6.22 & WFW 3.11
- MS Works 3.0 & Money
- 3-Year Limited Parts Warranty

4DX2-66 \$1599

4DX2-50 \$1299

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P4D-66

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- PCI Local Bus Graphics with 1MB
- Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- Desktop Case
- AnyKey Keyboard & Mouse
- MS-DOS 6.22 & WFW 3.11
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P5-75

- Intel 75MHz Pentium Processor*
- 8MB RAM, 256KB Cache
- 730MB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- Double-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- Desktop Case
- AnyKey Keyboard & Mouse
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional,** Bookshelf & Money
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P5-90

- Intel 90MHz Pentium Processor*
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- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 2MB
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- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- Desktop Case
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- MS Office Professional,** Bookshelf and Money
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P5-100XL

- Intel 100MHz Pentium Processor*
- 16MB RAM, 256KB Cache
- 1GB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- ATI Mach 64 with 2MB VRAM
- Quad-Speed CD-ROM
- 16-Bit Wavetable Sound Card & Altec ACS-31 Speakers w/subwoofer
- 3.5" Diskette Drive
- 17" Vivitron Color Monitor
- Tower Case
- AnyKey Keyboard & Mouse
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional,** Bookshelf & Money
- 3-Year Limited Parts Warranty

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A hearty thanks goes out to Computer Shopper readers for our "clean sweep" of the 1994 Computer Shopper "Best Buy" system awards! We truly appreciate your support, and we'll do everything in our power to live up to the confidence you've shown in us.

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Seven top-of-the-line flight CDs. Package includes TFX: Tactical Fighter Experiment, Aces Over Europe, Comanche, Strike Commander, Privateer, Wing Commander Armada and Warplanes. You also get a joystick and 20-disk storage rack. **\$99**

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Upgrade from a 15-inch Vivitron™ monitor **\$260**

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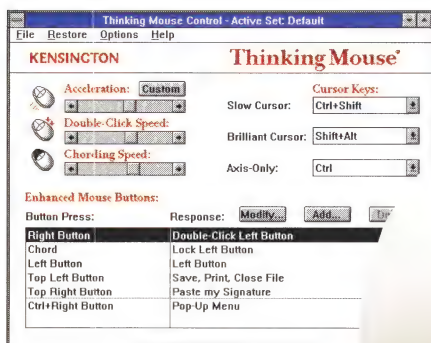
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Introducing Thinking Mouse. The mouse designed for the way you work.

Unlike ordinary mice, Thinking Mouse is a *programmable* mouse. That means you can customize Thinking Mouse by assigning frequently used commands to different mouse buttons. And because each command executes with a single click, you work faster and save valuable time.

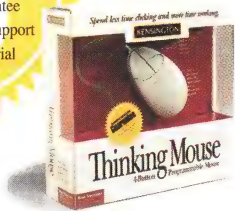


Thinking Mouse Control Panel

The way you program Thinking Mouse all depends on how you work. For example, you can open an application more easily by double-clicking with just one click. You can drag, scroll or highlight with less effort by locking a button down with just one click. You can even execute multi-step commands faster with a single click—like printing and saving a document, entering a block of text, logging onto a network, even sending a fax. The possibilities are endless.

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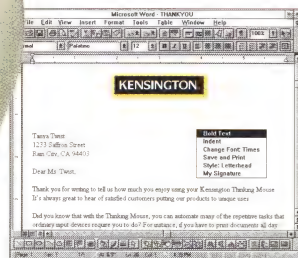
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Thinking Mouse lets you organize frequently used commands in a personalized pop-up menu.

First, you create the menu with our easy-to-use software. After that, simply click on the assigned mouse button when you want the menu to appear. Click once more to execute any command.

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Pop-Up Menu

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Formulating a Forms Strategy

Ever wonder what those three-part sign-on-the-dotted-line business forms represent? They're the backbone of most organizations.

Unfortunately, a lot of companies manage almost as many forms as they do employees, and that adds up to a major expense. BIS Strategic Decisions, a research firm in Norwell, Massachusetts, estimates that for every dollar a company spends buying paper forms, it spends another \$50 to \$150 filling out, correcting, transporting, filing, sorting, storing, and retrieving them.

Switching from paper to electronic forms makes obvious sense: Not only does it save trees, it saves money. But if the process of putting forms into electronic format isn't handled with kid gloves, it can create more problems than it solves. This month, Bob Johnson, a forms administrator at R.J. Reynolds Tobacco Company of Winston-Salem, North Carolina, describes how his company reduced its dependence on paper forms. —Ed.

Kicking the Paper Habit

If there's one thing I know, it's forms. I've spent 15 years designing, producing, sorting, storing, distributing and managing 4500 different kinds of forms for an 8000-employee company. R.J. Reynolds spends several million dollars annually to print everything from expense reports and vacation requests to contracts and specialized order forms. You might think the company's switch from paper to electronic forms four years ago would have left me jobless. Instead, our four-person forms management department changed the way it worked. We're now full-time work-flow planners rather than paper pushers.

Paper is a slow way to move information, one that creates storage and duplication problems. We found departments would wait to reorder critical forms until the last one was gone, often forcing our staff to place expensive rush

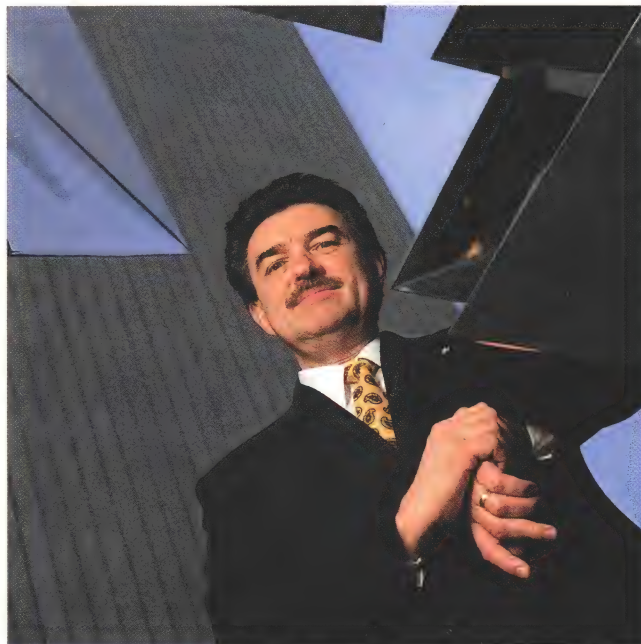
orders. Five years ago we began looking for ways to automate forms processing.

Our search took us to the F3 Forms Automation System from F3 Software of Fort Lauderdale, Florida (800/477-2562). The software is available for DOS, Windows, and the Macintosh and comes in two parts: F3 Design and Mapping, a \$1495 system for creating electronic forms and linking them to databases over a LAN; and F3 Fill, a \$149 user front-end for filling out and routing these electronic forms. (We paid for a corporate site license and so received a significant discount on the suggested retail prices.) Both parts of the system are compatible with the \$2995 F3 Pro Designer package—popular with paper forms manufacturers—on which F3 Design and Mapping is based.

Putting our forms online was an idea that sold itself. After all, everyone *wants* to get rid of paper. Most members of our support staff were champing at the bit to trade in their typewriters and bottles of correction fluid.

But without control, electronic forms can create new headaches. What if every department created its own expense form? Each one would collect different information; accounting would have a horrible time trying to resolve the formats. If a contract or employment form were designed incorrectly, or if it omitted information, the company could be legally liable.

So we decided to roll out automation slowly, in order to reduce risk and eliminate downtime while maintaining continuity between paper-based and electronic forms. We also wanted to lever-



Bob Johnson, forms administrator at R.J. Reynolds Tobacco Company

age our considerable investment in paper forms and use up our inventory.

Accordingly, we developed a three-phase plan of attack to put the software into use. The overall approach was to begin with the easiest, smallest solution and then expand from that point to a general, full-scale implementation that would lead us into the paperless forest.

The Gentle Beginning

The first part of the game plan was simple—to make the most generic and commonly used forms available electronically. This would save the company printing costs as well as warehousing and distribution expenses. It would also improve employee productivity.

We implemented phase one gradually, beginning with support staff in the information resources department. When everything was running smoothly, we continued our rollout until all departments were online. Then the members of each department attended demonstration training sessions.

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PCW 2/95

In this first stage, we installed the stand-alone version of the F3 Fill software on each PC in each department. The DOS-based version provided immediate access to many common forms. Users could then fill them out on screen and print them locally. A few months later, when a LAN version of F3 Fill was available, we converted from stand-alone to server-based software.

With the LAN version in place, we began to implement phase two, allowing users to route forms automatically. They can access the forms library via our network servers and click on the F3 Fill icon within Windows to select a form. In some forms, the routing logic is already hard-coded, so the user need only press the Send button to transmit it. Or the user can select a recipient for the form and send it via Microsoft Mail.

Going With the Flow

Currently, most of our personnel use the F3 electronic forms system. This year we reduced our budget for printing paper forms by approximately 25 percent. We expect our savings to increase annually as the system expands. We also reduced the cost of storage and distribution by the same percent and hope to reduce paper costs by 50 percent within five years.

The success of the first two phases positioned us to begin phase three, in which we take advantage of F3 Fill's ability to import and export data from the many databases F3 supports—Access, dBASE II, FoxPro, Sybase, Oracle, Paradox, and others. For example, when a user completes an expense form, it's routed through an approval process, and the data is downloaded to one of our corporate databases. We estimate this capability will eliminate at least two days of processing time.

By carefully planning the automation conversion process, we've been able to maintain control of the forms design and ensure that all forms reflect company policies and procedures. We've also been able to make sure that everything works before people in the company's far reaches get hold of it.

—Edited by Bronwyn Fryer

Bronwyn Fryer is a contributing editor for PC World. If you use PCs to manage people and other resources in a business environment, we want to hear from you (see page 12 for contact information).

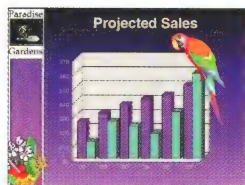
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Harvard Graphics won just about every award as 2.0, and 3.0 is cleaning up as well.

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Circle 7 on reader service card

Color Ink Jets Make a Business Statement



I've spent the last few weeks playing with color printers: the new \$7000 Hewlett-Packard Color LaserJet and the \$1400 Tektronix Phaser 140 ink jet. I've also tested under-\$1000 color ink jets from Canon and Epson. All have been among the neater additions to my office—better than, say, the business card scanner or the cellular modem. As adding color to my printed presentations has become routine, I've decided Walt Disney was right: There really is a *Wonderful World of Color* out there.

Color printing is one of the last frontiers of desktop computing and has long been ignored despite its ability to draw oohs and aahs from even the most jaded spreadsheet gurus. Until the past year or so, however, color printing has been too expensive, too complex, and way too slow. That's changed. Today, there's no reason children using computerized coloring books shouldn't also get a color print of their creation. And the multimedia revolution in home computing has pushed hardware companies to make color printing affordable for both business and home users.

The HP I looked at is faster and much more expensive than the Tektronix, which is built around Canon hardware, but they're aimed at different markets. The HP makes perfect sense as a shared office printer, and the Tek has already found its way to my home office. Both offer good color and color PostScript support and would probably make you very happy. For less money, you can pick a standout from Canon or Epson. The Epson ink jet offers better print quality in its 720-dpi model than any low-cost color printer I've seen (see *New Products*, September 1994). And

these printers can be had for well under \$1000. I'm not giving model numbers on purpose—this market is changing so fast that what I'm using today is likely to be replaced before you read this.

During 1995, you'll see adequate color ink jets for less than \$300. New technologies will bring color laser-style office printers to under \$5000. I say laser-style because not all of these printers will use laser printing technology. The important things for customers to compare before buying will be print quality, initial cost, and cost per page.

Small-Business Accounting

On a completely unrelated topic, I've been playing with small-business accounting packages from Peachtree and Intuit, the leaders in financial software for those with an aversion to numbers. The new QuickBooks Deluxe \$129 CD-ROM looks simple and is loaded with cool features. New on the CD-ROM are better online help—including verbal coaching—along with IRS publications, help worksheets for common business problems, and a directory of nine-digit ZIP codes.

Peachtree Accounting 3.0 for Win-

dows (\$169) isn't as friendly as QuickBooks, but it has a complete feature set and offers excellent tech support. It's a little heavier on real accounting than QuickBooks and is better suited for a somewhat larger business than the mom-and-pop shops targeted by Intuit.

Another product I like: the \$49.95 Day-to-Day Contacts 3.0 (formerly Dynodex). It lets me keep track of names and phone numbers and find them without having to start the program.

• Canon Computer Systems;

800/848-4123

Reader service no. 762

• Epson America; 800/374-7300

• Hewlett-Packard; 800/752-0900

Reader service no. 763

• Intuit; 800/624-8742

• Peachtree Software; 800/247-3224

Reader service no. 765

• Portfolio Software; 800/729-3966

Reader service no. 766

• Tektronix; 800/835-6100

Reader service no. 764

Contributing Editor David Coursey edits P.C. Letter. He can be reached on PC World Online (see page 12 for contact information).

Hot Competition in Unlikely Places Dept.: Flowcharting programs used to be one of the ultimate geek tools, the all but exclusive domain of programmers. Clear Software (allClear), Micrografx (the ABC family), Scitor (Process Charter),

and other companies are readying software that would transform the lowly flowchart into a real financial and business modeling tool...Don't you just love the new Microsoft slogan? Where Do I Want to Go Today, they wonder. A place where the largest software vendor routinely meets shipping schedules

LOOKING AHEAD



would be nice...Not to put too fine a point on this, but Lotus Development and WordPerfect/Novell are going to have to give us better reasons to buy their suites, or else Microsoft is going to capture in the high 90 percent of market share fairly

soon...I really like Spry's *Internet in a Box*, but I really hate the way SprintLink (the provider that's easiest to connect to with the kit) charges \$8.95 per hour for connect time. Where's Candice Bergen when we need her? These folks should be embarrassed into submission...

By David Coursey

A full-page photograph of Phil Jackson, a man with a mustache, wearing a dark suit, white shirt, and patterned tie. He is sitting on a basketball court, leaning back with his legs crossed and a confident smile. In the background, a basketball hoop and backboard are visible. The entire image has a strong red color cast.

PHIL JACKSON

HAS BEEN WARPED

SINCE THE START

OF THE SEASON.



Before any
basketball coach tries
to emulate the
winning ways of

Coach Phil Jackson, they

may want to take a peek inside his computer.

If they did, they'd see that Phil can do
some pretty neat things. Like use his computer
to review video
of last night's
game against

New York. At the exact same time that he's
e-mailing a respectful appeal to the League.
Of course, being a game day, he's also, at
the same time, using a Windows™ graphics
program to jot down plays.

They might also note that Phil never has
to worry about totally losing it (his programs,
that is) if an application ever goes down. And

that Phil can get on the Internet and other
on-line services incredibly fast and easy,
so he can get up-to-the-minute stats and
injury reports.

In short, they'd see that Phil has OS/2
Warp, a new multitasking operating system
that gives DOS and Windows* programs
amazing versatility. (And anyone who's ever

seen Phil coach,
knows he likes
versatility.)

**THE WORD "TECHNICAL"
DOESN'T FAZE HIM.**

Now, just so there's no confusion,
Phil's not letting anyone take a peek inside
his computer.

OS/2 Warp is available for under \$90.
(Or for just slightly more than the cost of a
court-side seat.) To get warped, stop by your
local software dealer, or call 1 800 3 IBM-OS2.
Ask for a free demo disk.

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Windows-friendly, totally cool way to run your computer. **OS/2® WARP**

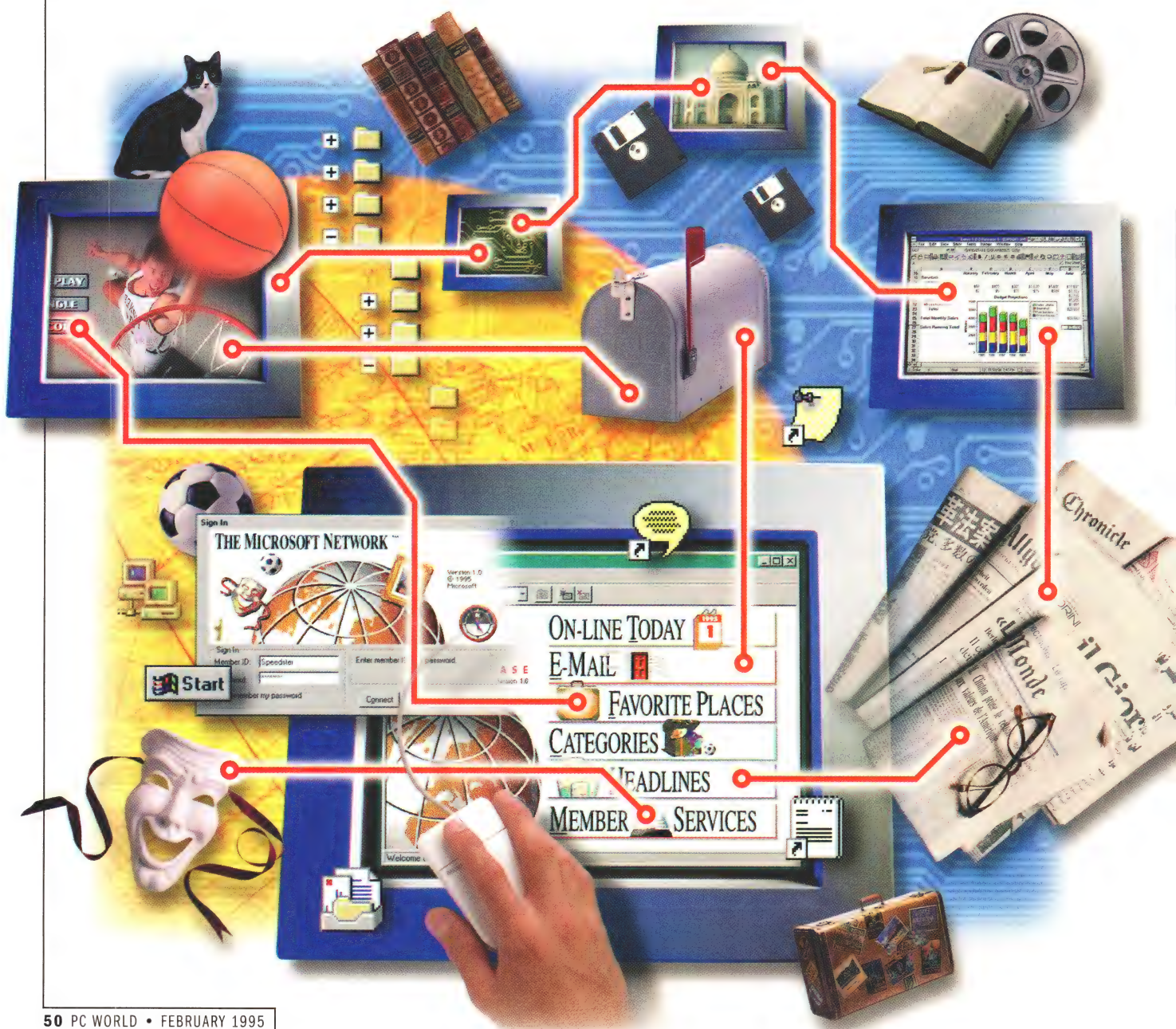


OS/2 Warp is available from your software dealer. It is also available from IBM for \$89 by calling 1 800 3 IBM-OS2.

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Top of the **News**

GOING ONLINE WITH WINDOWS 95



Edited by Russell Glitman

Turns out Windows 95 is more than an operating system—it's an online service, too. Microsoft plans to include The Microsoft Network (MSN) in Windows 95. You'll find extensive integration between the two: You'll be able to place shortcuts to favorite forums on your desktop and use tool bar buttons in applications to click directly to your favorite content areas. Getting wired has never been easier.

Scheduled to ship with Windows 95 in the first half of this year, MSN offers great navigational tools and a creative approach to the presentation of content. MSN client software will automatically install on your hard drive when you load Windows 95, and you'll be given the option to register Windows 95 online and join MSN the first time you run the new operating system. Once you're a member, the service's icon will appear on your desktop. You'll be able to join MSN only if you own Windows 95; it won't work with previous versions of Windows. Pricing was not set at press time, but according to Microsoft officials, the basic service fee, perhaps as little as \$4 to \$5 a month, will be substantially less than competitors'.

For that price you'll get access to a range of services, including mail; forums; chat areas for personal, business, and home issues; technical support; and downloadable files from Microsoft and third parties. A variety of content providers are also expected to offer news and services on the network.

Cruising

The beta version of MSN we looked at, which was included with the October beta release of Windows 95, has the best navigational tools of any online service we've seen, thanks in large part to MSN's tight

integration with Windows 95. While efficiency is always a plus, it's especially important when you're paying connect time charges—and doubly so with MSN because offline capabilities will be limited to composing and reading E-mail, unlike the extensive offline features that CompuServe and Prodigy offer. Another time-saver: 14.4-

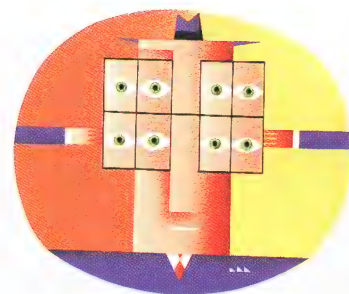
kbps access will be available via half of the service's U.S. local access numbers and for many international sites, too.

Navigating MSN is a lot like navigating Windows 95; the two have a similar look and feel and a good many other things in common. To make your way around the service, you can choose to navigate either in a windowed view with icons or via a directory tree that uses a version of the Windows 95 Explorer, a vastly improved File Manager. The Explorer is a great way to rapidly view and

search the service's many layers. Once you find an area of interest, click on it, and MSN pops up that section or message.

During your online trek, the Windows 95 Taskbar can display all active MSN windows or folders (also called directories), as well as active BBS messages. You can also opt for a single window view that doesn't update your Taskbar. Opening messages from the Taskbar works just as it does in Windows 95.

Like America Online, CompuServe, and Prodigy, MSN lets you create a list of frequently visited areas that you can go straight to by typing keywords. But for now, MSN alone gives you the option of creating a pointer, or alias, to an area on the service as a Windows 95 Shortcut. Shortcuts are OLE 2.0 objects that you can save as icons on your desktop and activate even when you're not logged on: Simply click the Shortcut's icon, and the Shortcut will auto-



News Monitor

VENDORS RESPOND TO PENTIUM BUG:

In mid-December IBM halted shipments of Pentium-based PCs, claiming that bugs in the Pentium's floating-point unit (FPU) were more severe than Intel had stated. While Intel officials claim the FPU flaw affects only "high precision" applications such as statistical and structural analysis, engineering, and satellite tracking, IBM says its own tests indicate that common spreadsheet jobs could also be affected by the Pentium's problem of producing wrong answers on complex calculations. Other leading vendors, including Dell and Gateway, have said they would review customers' Pentium complaints on a case-by-case basis and provide replacement parts if necessary. Users can also seek a replacement Pentium from Intel (call 800/628-8686 for more information). Intel says it has fixed the Pentium bug, and volume shipments of the corrected chip are expected to start in January.

BAD TIMES AT HAYES... Cash flow woes have caused modem giant Hayes Microcomputer to file for Chapter 11 bankruptcy protection. CEO Dennis Hayes says a "short-term cash shortage" led to the filing but adds that the company will continue to operate during its reorganization.

...BUT GOOD TIMES FOR MODEM BUYERS: Meanwhile, modem prices continue their downward spiral. A recent study by market analyst firm Frost & Sullivan predicts a significant drop in

(continued on page 53)

Top of the News

matically prompt you to log on and then take you directly to the designated area. You can also send copies of Shortcuts via E-mail or post them in forums for others to use.

Speaking of E-mail, MSN will rely on Windows 95's Microsoft Exchange E-mail feature for messaging. With Microsoft Exchange you can send mail to anyone who has an Internet address. And not just drab ASCII text files, either—you can send messages in Rich Text Format, dressing up your E-mail with graphics, fonts, and colors. To cut connect charges, you can also opt to

preview header information on your messages and download just the ones you wish to read immediately. Thanks to Windows 95's multithreading capabilities, you can perform other activities on- or offline while files are downloading. Microsoft Exchange won't have a spelling checker, however.

MSN will use progressive rendering of graphic images to improve performance. Progressive rendering, which AOL also uses, lets you view text while waiting for graphics to download. The graphics appear first as blurry, low-resolution images and become progressively more detailed. MSN will also support hypertext links in content so that you'll be able to move to a related topic by clicking on a word or image.

There's No There There

While Microsoft has established the online infrastructure, MSN lacks content. The beta we looked at consisted primarily of chat rooms for live conversations and forums (called bulletin boards) in which

members post messages and files. As with E-mail, you can post messages in Rich Text Format and embed Shortcuts, graphics, and files in your messages. A tool bar at the top of each screen includes handy buttons that let you easily place a section in your favorite places folder. Even better, Microsoft plans to add file libraries from which you can drag and drop files onto your hard drive.

You can also assign a Shortcut to a customized button in future applications that



FLAME WARS: CompuServe's Robert Mainor is skeptical of Microsoft's ability to dominate the online market.

The Microsoft Network

An online service for Windows 95 users, with great navigational tools.

Key Features: Integration with Windows 95 • Shortcuts to specific areas on the service • Progressively rendered graphics and hypertext links • Limited Internet access • 14.4-kbps-modem support

Pricing: Not set at press time

Availability: First half of 1995

Microsoft, 800/426-9400, 206/882-8080

Reader service no. 823



Executive Suite

How to Manage Your Staff Schedule



Staff scheduling can be a nightmare, says Kathy L. Norman, a manager for Great Western Bank in Northridge, California. It eats up your time and your patience. Errors are unacceptable. Add flex-time to the mix, and the job gets downright nasty. Norman used to spend 6 hours a week on scheduling, coloring in Excel worksheets and marking up bar charts. Then she

tried a scheduling program, Adaptiv Software's PeopleScheduler Plus. She's used the \$495 program since March 1994 and has been a beta tester of the new version, 2.0, which was expected to ship in December 1994. Her verdict: "This is a huge time-saver."

Norman handles a particularly complex scheduling situation. As section manager for mainframe computer services at Great West-

ern Bank's nationwide data center, she has to schedule employees for 24-hour coverage seven days a week. Most of her employees work on flex-time, so each one can have a three-, four-, or five-day week with 13-, 10-, or 8-hour days. "When I was doing all this by hand, I was drawing bar graphs just to see where holes [in staffing] were," Norman says.

PeopleScheduler automates much of the work via an easy-to-read, easily updatable group schedule chart. You set individual shifts by clicking on an employee's name and dragging *timebars*, or buttons, along a timetable. The software warns of scheduling conflicts. Norman also likes the search filters, which let her search for people by job title. The software's reports let her keep track of attendance and vacations. Norman can export and import data to and from company records that are stored in Microsoft Access.

Norman's only complaint: somewhat slow report-printing times, which Adaptiv says it will fix by the time 2.0 ships. Now, Norman is through with the nightmare of paper-based scheduling. "I'll recommend this to other people here," she says.

will take you directly to the application's support area on the service. When MSN is released, Microsoft expects other hardware and software vendors to establish support forums and services and provide one-button access to them from within applications.

Microsoft plans to give third-party content and service providers extensive control over the pricing and appearance of their areas on the service. MSN will also include advertising. Microsoft is expected to announce partnerships with content providers in the first half of 1995. However, a demonstration of MSN last fall included sample content that ranged from mainstream information providers like *USA Today* to entertainment services like Nickelodeon.

Like Prodigy, MSN will let multiple users access a single account. Certain areas of the service will be designated as adult only. Most software upgrades to the service will take place online. It's possible that other software could also be upgraded this way.

Initial Internet access will be limited to mail and Usenet news groups. AOL, CompuServe, Delphi, and Prodigy easily beat MSN in this regard; all provide you with more extensive Internet support, such as the ability to access remote databases, download files, and browse World Wide Web pages.

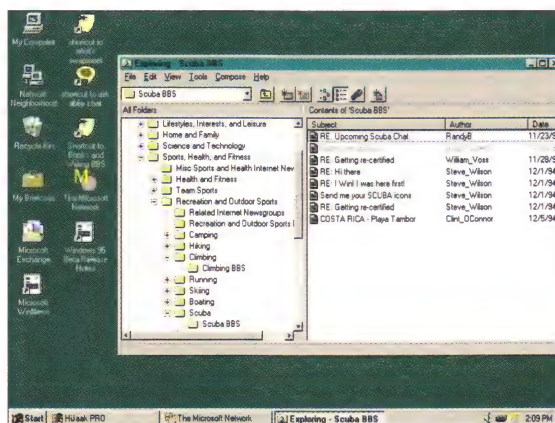
Rumbling Grumbings

No sooner was the beta out than some online competitors proclaimed the online-operating system union unfair. Just do the math: There are more than 60 million Windows users, most of whom Microsoft expects will upgrade; and starting this summer most people who buy new systems will find Windows 95 bundled with their PCs. If just 8 percent of the upgrading and new Windows 95 users subscribe to MSN, the service will have more subscribers by the end of 1995 than the total number of online users in the United States today—4.7 million, according to Forrester Research.

A chief critic of MSN's integration with

Windows 95 is AOL president Steve Case. "Consumers should be given equal access to all options when choosing an online service, just as they have when choosing a long-distance telephone service. Either all the services should be bundled with Windows 95, or none at all," he argues.

MSN's key challenge is to build content. CompuServe, for example, has forums for more than 800 computer companies and more than 2000 product and service providers. Microsoft will begin with its own Microsoft Home CD titles.



RAPID ONLINE NAVIGATION of The Microsoft Network is easy with the Explorer view, shown in the left side of the window.

So it's not surprising that CompuServe officials are skeptical of the challenge. "Just because Microsoft is big doesn't mean it will get it. You can't build an online community overnight," says CompuServe vice president Robert Mainor.

Nevertheless, CompuServe and Prodigy executives were contacted last fall by Department of Justice officials looking into the planned Microsoft merger with Intuit. Microsoft hopes to make Intuit's Quicken a front end to online financial services it's planning for MSN. Justice has put the merger on hold while it looks into potential antitrust violations by Microsoft.

In the meantime, Microsoft is forging ahead with development of Windows 95 and The Microsoft Network. Almost everyone with a modem is expected to try out MSN. Whether you'll want to make it your online service will ultimately depend on the content Microsoft offers.

—Anita Hamilton



News Monitor

(continued from page 51)

high-speed-modem prices this year. Average street prices for V.34 (28.8-kbps) modems should fall below \$300—a trend we're already seeing.

INFO HIGHWAY GOLD RUSH CONTINUES: America Online has bought Internet viewer and browser developer BookLink Technologies. Meanwhile, CompuServe has joined forces with Spry, maker of Internet in a Box, to deliver Internet connectivity to the corporate world. The deal is designed to capitalize on the combination of Spry's user-friendly Internet access tools and CompuServe's new Internet Services division. MCI has announced InternetMCI, a service limited to the Internet's graphical World Wide Web and focusing on a business "mall" service that MCI hopes to sell to corporate America. Prodigy, long the underdog in matters of the Internet, has also announced that it has a Web browser in beta trials.

TRY BEFORE YOU BUY: As part of a new IBM distribution program called Sponsor's Choice, 21 PC Warehouse and 200 Software Etc. stores are now selling selected applications on a try-before-you-buy basis. Here's how it works: The store sells a trial copy of an application for \$4 to \$6. Some functions, such as save and print, are disabled. If you decide to buy the program, you call an 800 line, then receive a registration number and a code to unlock the software. You're encouraged to pass on the trial disk to friends for a bonus—each time someone ends

(continued on page 55)

Top of the News

Fashionable Computing PC Wear in 2005

While everyone gears up for the next version of Windows and future generations of processors, computer scientists are quietly working on truly revolutionary PCs that will change our perception of computers and how we compute. These products are not due to ship later this year, or even next. These are computers for the twenty-first century. They may also be fashion statements.

Don't sneer: Timex already has a watch on the market that works with your computer to keep you on schedule. In ten years' time you'll be wearing your computer

(or computers). One possible design is already under development at Carnegie Mellon University.

One Size Fits All

The Carnegie wearable PC consists of a headband with a see-through visor and a necklacelike video input device. It's just one of many configurations scientists envision for wearable PCs. Not only will the form of PCs change radically, their function will too; PCs in 2005 primarily will be for communication rather than computation.

Daniel P. Siewiorek, director of the Engineering Design Research Center at Car-

negie Mellon, and fellow researchers have been working on this device since 1991.

They have also created a device called Navigator that guides visitors around the Carnegie Mellon campus. You say "Find the library," and the device displays a map and directions to the library, based on your current location. As you walk, the device updates and changes the perspective it displays. Navigator gets its positioning information from the Global Positioning System, the government satellite system that lets airplanes and ships identify their locations. Navigator is accurate to within 30 meters.

In the next decade, image matching technology will provide positioning accurate to within a matter of centimeters, Siewiorek says. With image matching, your PC would constantly take snapshots of your surroundings and compare them to a database.

Once the PC has your location, it can instruct you. The secret here is a technology called "augmented reality," which overlays graphic and text instructions on a video background of the real world around you. Carnegie Mellon is working with Boeing

Portable Personal Communicator Is Future Look of Computing



and Honeywell on this project. Current versions are too expensive and too heavy to wear around the house, but a consumer product costing \$300 and weighing less than a pound could be ready within ten years, according to Siewiorek.

Plug Into the Tribe

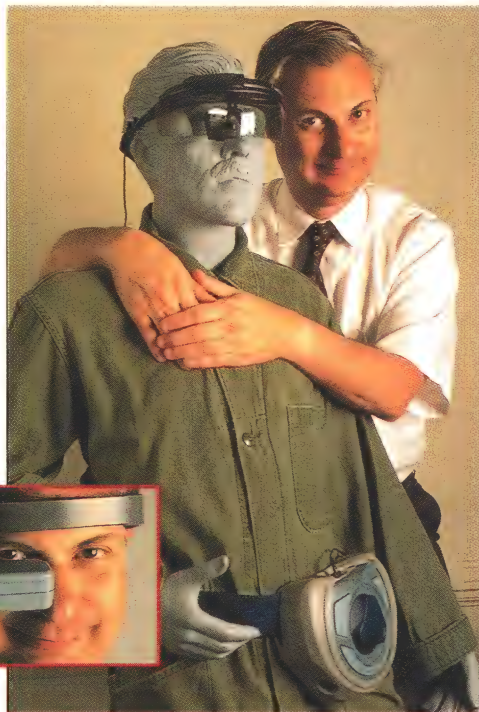
By 2005, descendants of today's personal digital assistants (PDAs) also will have evolved into small, lightweight computers focusing on communication. Among the designs being developed is a device using a combination of voice activation and a wireless video phone, according to Brian Bakoglu, a research director at IBM's T. J. Watson Research Center in Yorktown Heights, New York.

The first improvements in PDA technology will focus on performance. Within five years CPUs performing up to ten times faster than a 66-MHz 486DX2 will be available. Continued miniaturization will yield storage devices packing 500MB of data on a device half the size of a PCMCIA card. And batteries that last a year, just like watch batteries today, will power these units. They will be included in clothing or sold as fashion accessories and social statements, just as the latest generation of phone pagers is today.

Ease of use will be key to their success, and you can expect interfaces with personality—Bob to the extreme, for example (see “Microsoft’s Bob Meets Home PCs”). In fact, you might even select your PDA based on its attitude more than any other criteria. “Today anyone can make a phone call or watch TV; [we] want PCs to be that easy to use,” Bakoglu says. These “human-centric” technologies include speech recognition, which lets a PC respond to your voice, and text-to-speech, which lets a PC read digital information out loud. Although these capabilities exist now, they’re crude and inaccurate due in part to the slow performance of today’s hardware.

Video conferencing and wireless commu-

nications technologies also exist today, but combining the two into a usable product will take time and innovation. Current PC-based video conferencing products yield grainy, choppy video. The main reason for this limitation is the slow performance and limited bandwidth provided by even the fastest phone technologies. Moreover, wireless technologies, like cellular, are among the slowest, least reliable phone technologies for sending data—they can’t even



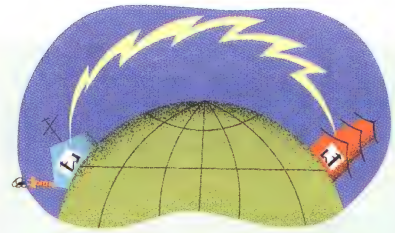
READY TO WEAR: Daniel P. Siewiorek stands by his computerwear. Inset: an early commercial version.

support poor-quality video conferencing.

Two developments in the next ten years will remedy these problems. First, improved compression algorithms will reduce the size of video data to the point where conferencing requires less bandwidth. Second, faster wireless technologies, such as spread-spectrum radio transmission, will operate at high speed over long distances, according to Siewiorek.

Clearly, the products and technologies described here are more reality than fantasy. As IBM’s Bakoglu puts it: “Ten years ago they were dreams, today they’re reality, and in ten years they’ll be ubiquitous.”

—Randy Ross



News Monitor

(continued from page 53)

up purchasing the application, you earn points that entitle you to discounts on future software purchases.

MAKE YOUR OWN CD-ROMS: Prices of CD-recordable (CD-R) devices, which let you create CD-ROMs, will plunge dramatically in 1995, according to vendors. Sony Electronics and Pinnacle Micro have recently announced CD-R systems with expected street prices of under \$2000—the devices sold in the \$3000 to \$10,000 range in 1994. Analysts say prices will continue to drop; Philips plans to announce a \$1000-range product at the end of first quarter 1995. The new CD-R prices will bring custom CD-ROM publishing to more corporations, says Dataquest analyst Patty Chang.

BOOT FROM YOUR CD-ROM DRIVE: You can boot your computer with a 360K floppy just as easily as with a 540MB hard drive, so why not with a 650MB CD-ROM? That’s the question Phoenix Technologies has answered with its Bootable CD-ROM Specification 1.0 in PhoenixBIOS 4.0. The company is one of the largest vendors for system BIOSes and supplies such companies as Gateway, Fujitsu, and IBM. One CD-ROM can hold numerous operating systems, such as Windows, UNIX, and DOS. While the bootable CD-ROM specification is built into PhoenixBIOS 4.0, PC manufacturers using the BIOS must activate it.

Edited by Randy Ross
Contributors: Joe Abernathy, Jeff Bertolucci, Michael Lasky, and Laurianne McLaughlin

Microsoft's Bob Meets Home PCs

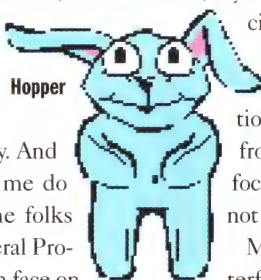
TEST DRIVE

I used to own a white 1963 Ford Falcon with red bucket seats and a plastic Mr. Potato Head on the dashboard. I called the car Isabelle. She wasn't much to look at, but the memory of her can still make me smile. Now ask yourself—when was the last time you smiled at your computer?

For me, it happened yesterday. And you'll never guess what made me do it—Microsoft. That's right. The folks who brought you the ugly General Protection Fault are putting a human face on the PC. They've even given it a name: Bob.

Bob will go home with a lot of systems this year; Gateway, among others, will include Bob on its home PCs. Microsoft says Bob is a Windows application, but it's really a Windows replacement—a shell geared

largely at novice users. Like Packard Bell's Navigator, Bob's interface uses a home metaphor with rooms to provide a familiar view into your PC. Clicking on an object in a room, say an address book, opens the associated application, in this case a Rolodex. Bob also has eight



Hopper

tightly integrated applications (with add-ons available from Microsoft and others) that focus on what people need to do, not what the computer can do.

Microsoft calls Bob a "social interface" because it's designed to make the PC behave the way we expect it to. Bob does this by using well-developed characters, called guides, who tag along throughout the program and help out when you get stuck. They range from dominant personalities (like a graffiti-painting rat

named Scuzz) to submissive ones (like Hopper, a bunny who talks like a graduate of a 12-step self-esteem program). In the late-beta version I tested, the guide I selected was Orby, a jolly planetary kind of guy with a crush on Saturn.

Walk Right In, Sit Right Down

You enter the program as you would enter a house, by knocking (that is, clicking) on the door. If you're new, you sign in, select a guide, and establish a password.

Once inside, you can add to or change a mix of common and private rooms. You might have a family room where you keep programs everyone uses—like a family address book or calendar. I locked the computer's system files and my finance programs in a private safe and squirreled away my favorite game in the attic. My kids put

Bob: The People's Choice for Home Computing?

Let's face it. Bob is, well, different. Do people really want a cute little character hanging around with them while they try to get things done on their PC? To find out, we brought in a handful of PC-using friends—and

a few who haven't yet taken their place in the PC revolution—to see what they thought.

The response? A few skeptics—mostly experienced users who knew their way around DOS and Windows—thought the characters

were too juvenile to be of much use, but the PC newcomers in our group welcomed the changes. Almost everyone chose Java, the caffeine-wired dinosaur, as their guide at some point—perhaps a testament to the importance of coffee in all our lives.

Here's a sampling of their critiques:

"The characters are useless; they just clutter up the screens. The information bub-

bles are an okay start, but I'd like more auditory information." —*Bob Lewis, San Francisco; longtime PC user*

"I'd buy it for the family, but I'm not sure how long I'd use it before getting rid of it. Once you know what you're doing, there's no real need to dress it up." —*John Forster, Oakland; experienced PC user*

"The helpers are a good idea, but I'm not dazzled by the choices. They need more personality. It was still confusing trying to figure out some of the applications, like how to edit a letter or enter all the necessary information in the checkbook." —*Michael Smith, Oakland; novice Windows user*

"I don't have much interest in trying to figure out DOS. This would be a lot more fun. It actually made me a little interested in the computer." —*Holly Forster, Oakland; PC novice*

"It seems like something that would run on a Mac. The character [guides] help is excellent; it made it much more enjoyable. I espe-



BOB'S GUIDES get a mixed review, but the Forsters would take it home.



Orby

their art programs in a playroom, which they turned into an old castle. Installed programs appear as software packages you can place anywhere in a room.

Instead of a manual, Bob comes with help balloons. Even better, Bob tracks your actions so your guide can suggest meaningful tips. But there are also painful silences. What if I need to install a printer? The guides don't help me with that. They can find the Control Panel, but they can't tell me how to use it.

Something for Everyone

Although Bob's interface is likely to be what first piques your interest, the integrated applications are what really make the program useful.

Bob Calendar helps you keep track of all your family commitments—from soccer games to doctor visits. Personal calendars for each family member can be shared or private; appointments on your personal calendar can be put on the household one for everyone to see.



"BETTER than Windows." —Audri Ivery

cially like the way they suggest quicker ways to complete a function. I'd choose Bob over Windows for home use. It's much simpler than pulldown menus and more fun." —Audri Ivery, Oakland; five-year Mac user

—Roberta Furger

If letter writing is a dying art, Bob Letter Writer is artificial respiration. It's no good at long reports, but it's just right for a letter to PTA members or an E-mail message to Congress. It checks your spelling, lets you add borders and clip art, and includes sample letters and mailing lists.

Bob Checkbook is a slimmed-down Microsoft Money. It focuses on bill paying and budgeting. A related application, the Financial Guide, handles other money matters, like learning about stocks and mortgages, and comparing brands when making a major purchase.

Bob E-Mail lets you exchange mail with anyone no matter what their online service. Bob Mail users can read Rich Text Format documents from Letter Writer, complete with graphics and formatting. There are some disappointments. You can't set rules for automatically sorting messages. And my guide never mentioned if I could automatically save E-mail addresses. Microsoft hasn't said if it will provide links between Bob E-Mail and the Microsoft Network (see "Going Online With Windows 95").

Bob Address Book mimics paper address books, but it also offers features not found in the paper versions. I can type in a friend's address, for example, then make note of a special occasion, like a birthday. With Bob, I just click on the birthday cake icon in my address book, and the date is recorded in my personal calendar. Orby reminds me ahead of time to pick up a card and get it in the mail.

Bob Household Manager contains templates in which you can enter information about medical checkups and records and automobile maintenance (schedule an oil change, and it's put on your to-do list).

For the kids, GeoSafari is a PC version of the popular geography trivia game. To play, kids have to beat the clock in identifying countries, states, cities, and landmarks.



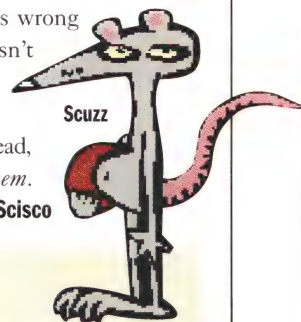
You're never alone with Bob, Microsoft's Windows shell and home application. Animated guides help you every step of the way.

Who Needs This?

Bob's a natural for any family looking to gain immediate benefits from their PC. But experienced users who dismiss Bob and its apps because of the radical interface may miss an opportunity to explore the PC in a new way. You'll need the right machine—Microsoft recommends a 50-MHz 486 with 8MB of RAM. And, unless it's bundled on your next home PC, you'll have to shell out \$99—a bit steep even for a social interface.

I would use Bob on my family's computer. I would use it because Bob makes me feel good—and what's wrong with that? And it doesn't require that my family think the way a computer thinks—instead, Bob accommodates them.

—Peter Scisco



Bob

If you or your family are new to computers, make fast friends with this combination of integrated applications and an interface that helps make computing easier.

Key Features: Social interface • E-mail service • Sophisticated home applications • No documentation

Pricing: \$99

Availability: March

Microsoft, 800/426-9400

Reader service no. 814

THEY NOT ONLY
SOUND GREAT,
THEY PUT PRODUCTIVITY
IN MOTION.



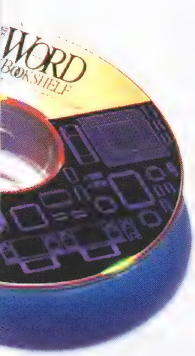
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Circle 220 on reader service card

The Easy Way to Browse the World Wide Web

TEST DRIVE

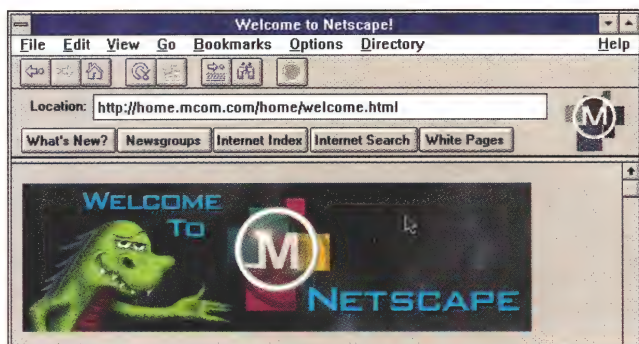
Traveling the Internet is getting easier and more vivid thanks to a new generation of software, called browsers, that helps you navigate the graphical realm of the Internet, known as the World Wide Web.

One of the best new arrivals is Netscape from Netscape Communications Corporation (formerly Mosaic Communications). Although I tested a beta version, it was immediately clear that Netscape is faster, more elegant, and better at inte-

grating features than any other browser I've seen. You navigate the Internet via 13 on-screen buttons that provide access to printing, destination, and search facilities. Two buttons let you page back and forth between places you've been, which in turn are cached for quick access.

The menu options include a handy bookmark feature to let you zip to your favorite Internet hot spots. Bookmarks help keep frivolous destinations such as The Jihad to Destroy Barney on the World Wide Web (<http://deephought.armory.com:80/~deadslug/Jihad/jihad.html>) apart from serious resources like the home page of the Library of Congress (<http://lcweb.loc.gov/homepage/lchp.html>).

Netscape is optimized for Web access with 14.4-kbps modems. To maximize your cruising speed, you can disable image viewing, turning the capability back on when you reach a destination that contains interesting graphics.



WELCOME TO THE WEB: Netscape uses extensive navigation options to provide quick browsing of the World Wide Web.

Netscape

Outstanding Web browser tames the Internet.

Key Features: Fast •

Provides easy navigation

Pricing: Free via anonymous

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Availability: Immediate

Netscape Communications

Corp., 800/638-7483

Reader service no. 821

Netscape manages the graphics/performance conundrum better than competitors because it downloads the text of a Web document first, which you can peruse while incoming images load in the background. Using a form of progressive rendering, Netscape displays an outline of the image and then fills in details. With a rough idea of what a finished image will look like, you can choose to continue, or click a stop button that halts downloading. To help promote business transactions online,

Netscape also has encryption and authentication functions, but only when used in conjunction with the company's Net-Site servers.

The best thing about Netscape is the price: free, unless it's for business use, in which case it's \$99. It's not surprising that Netscape is so good; it was created by Marc Andreessen, who helped write the original Mosaic. I was up and running in about an hour; I've had more trouble configuring printers.

—Peter Jerram

Redefining Best of the Net:

Each week some new piece of software claims the title "best of the Internet," so I approach with caution the matter of awarding such accolades. Yet now, and likely for several months to come, there is a new—and demonstrably best—way to approach personal Internet access.

While Netscape excels at browsing the World Wide Web, for a comprehensive Internet package, nothing beats Internet Chameleon 4.1 from NetManage. Priced at \$199 (upgrades are \$15), it offers improved performance, strong updates of existing features, and new capabilities that raise the bar for competitors.

Chameleon lets your Windows computer speak TCP/IP (the net's native networking language), so that you can access all the features of the Internet. Until now it's been hard to configure

these tools. Chameleon takes a long step forward in this release with the addition of one-button configuration for any of five national service providers.

Improvements to Chameleon's core suite of applets include a more reliable tool for sending and receiving electronic mail, and FTP, still the best applet for transferring software and data files,

now works with a new Archie tool. In addition, Chameleon gives you usable Usenet newsreader, telnet client, gopher, finger, whois, and ping.

The hottest goody: WebSurfer, a Netscape and Mosaic competitor. The Web home pages you visit are cached to your hard drive, which trades cheap disk space for acceptable performance. NetManage Inc., 408/973-7171. Reader service no. 806

—Joe Abernathy



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Creating the PBS of the Internet



CONGRESSIONAL PLEDGE BREAK: National Public Telecomputing Network founder Tom Grundner seeks federal funding for community public computer network services.

A grassroots coalition of business and community leaders is attempting to sway Congress to fund a nationwide computer network of community nonprofit networks, much as the Corporation for Public Broadcasting funds local television service.

The National Public Telecomputing Network (NPTN), as the movement is known, coordinates donations of time and resources to build community computer networks that provide free access to a wide array of business, governmental, and educational resources, including the Internet. Participating systems are known as Free-Nets.

Founded in 1984 by Tom Grundner to share medical advice with the residents of Cleveland, Ohio, the NPTN slowly spread to a handful of other cities until the Clinton-Gore information highway plan prompted national attention. Growth has exploded, with systems now in 50 cities; 40 more are scheduled to go online in 1995.

"We've taken this about as far as we can based on individual nonprofit entrepreneurship," Grundner says of the NPTN. "We have proven the concept, proven the technology, proven that people want these systems and use them well. We need an institution to do for this medium what the Cor-

poration for Public Broadcasting did for public radio and public television."

The experiences of those who create and use the Free-Net systems are as varied as the communities in which they reside. One appealing model can be found in Battle Creek, Michigan, where community leaders conceived the Great Lakes Free-Net as an economic development tool. "One of our goals is to increase the general user comput-

er literacy so that as new jobs are brought in local folks can qualify for them, as opposed to bringing in folks from outside," says Merritt Tumanis, president of the board. "It's starting to work."

After a year of planning and a year online, the system has 2500 subscribers—but it needs 10,000 to break even. It was brought online for \$35,000, which various local businesses contributed.

Most Free-Net services include interactive education, which provides remote education services, and teledemocracy, which offers direct interaction with local, state, and federal government resources. The Free-Net will also enable users to access the business, philanthropic, artistic, and social service organizations that give a city its sense of identity, and will provide limited Internet access.

Unfortunately, the PBS analogy will also mean dreaded pledge breaks. Most support for Free-Nets has come from citizens and the local philanthropic community. The NPTN has received some \$1 million from Ameritech, \$25,000 from the Morino Institute, and several grants from Apple Computer for the development of services that benefit the entire Free-Net family. The Department of Commerce recently awarded \$450,000 to encourage Free-Net con-

How to Start Your Own Free-Net

You'd like to foster community computing in your city? This is how Houston did it.

- 1 Determine the amount of computing and communications capacity your system will need. You can extrapolate this from the National Public Telecomputing Network (NPTN) starter kit and then figure out how much money you need to go online. Hardware donations may alleviate some costs.**
- 2 Enlist community partners for an advisory board. Obtain federal and state recognition as a nonprofit organization. Reach out to business and philanthropic communities to sponsor initial deployment, and seek a partnership with a local Internet access provider.**
- 3 Once your start-up system is operational, reach out into other areas of the community. It's best to get people from targeted communities to do your evangelizing. Get a librarian to work with librarians; ask someone from the United Way to work with public service groups; tap the local PC users' group as a source of computer-savvy volunteers.**
- 4 Carry the mission to parts of the community that otherwise might be neglected; create public terminals at homeless and youth shelters. Don't overlook the arts. A Free-Net must reflect all aspects of your community.**

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- One-year shelf life
- Too many different formats
- Reliable?



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The CD has replaced the tape cassette in the music industry. And Recordable CDs are well on their way to replacing tape in the computer industry.

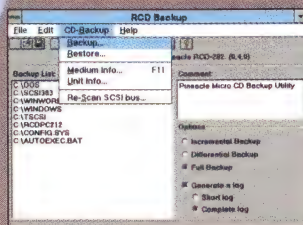
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Windows RCD Backup Utility

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Buffalo	716/645-3085	Medina, OH	216/723-6732
Champaign-Urbana, IL	217/255-9000	Ottawa, ON	613/564-3600
Cincinnati	606/781-5575	Providence	401/831-4640
Cleveland	216/368-3888	San Luis Obispo, CA	805/781-3666
Columbia, MO	314/884-7000	Seattle	206/386-4140
Columbus, OH	614/292-7501	Springfield, MO	417/864-6100
Dayton, OH	513/229-4373	Sylvester, GA	912/776-1255
Denver	303/270-4865	Tallahassee, FL	904/488-5056
Dillon, MT	406/683-7680	Tempe, AZ	602/965-4151
El Paso, TX	915/775-5600	Trail, BC	604/368-5764
Elyria, OH	216/366-9721	Victoria, BC	604/595-2300
Gainesville, FL	904/334-0200	Youngstown, OH	216/742-3072

This list of modem numbers does not include all the services scheduled to go online between press time and publication time. Phone 216/247-5800 for information about activities in areas not listed.

struction in 20 rural areas. But the burden still falls on volunteers to raise the startup funds for urban systems, which can cost up to \$150,000 to deploy.

Grundner's proposal, which he is trying to put before Congress, would create a Corporation for Public Cybercasting, or CPC, to help communities with setup costs. It would supply \$2 in federal funds for every \$1 raised at the state or local level, to a limit of \$100,000 for urban systems and \$25,000 for rural systems—numbers that are based

on Grundner's experience in fielding such systems. Grundner hopes to have his proposal included in the telecommunications reform bill expected to be reintroduced in the next session of Congress. Alternatively, he is seeking a congressional sponsor to introduce a separate Free-Net funding bill.

Not everyone agrees that Grundner's plan is in the best interests of the public. NYNEX, the regional Bell operating company serving the New York area, opposes taxpayer assistance for Free-Nets, arguing it

will create government-subsidized competition for NYNEX's proposed services.

Grundner responds that NYNEX and others hoping to sell Internet access are seeking profits from a service—the Internet—that was developed with tax dollars.

"A lot of opportunities are opening up right now, and a lot of businesses are interested," he said. "That's fine. But what they are selling are tickets for an on-ramp to a highway they didn't build.

"All we're trying to do is offer the people who supported this system in the first place, taxpayers, the opportunity to get access to it. We're not a threat to the commercial marketplace. What we do is introduce the technology to people. The best analogy is that in the early days of the public library system, a handful of commercial bookstores went nuts...but a synergy formed."

To support your local Free-Net or obtain access, you can contact the NPTN at 216/498-4050 (via E-mail it's info@nptn.org). To encourage action on the CPC plan by your elected representatives, phone 202/224-3121 and ask for your congresspeople and senators by their names.

PC World senior editor Joe Abernathy is executive director of the Houston Civic Network, an NPTN affiliate.

Republicans Lay Plans for the I-Way:

A vow by the new Republican congressional leadership to expand dramatically the government's presence on the information superhighway holds the promise of empowering citizen activists and limiting the power of professional lobbyists.

Following the midterm election, Speaker of the House Newt Gingrich, R-Ga., said he will require that all pending legislation, committee reports, and governmental paperwork be available free on the Internet as it's distributed to Washington insiders. This will limit the practice of sneaking provisions into bills to appease special interests. And ordinary citizens—at least those with computers, modems, and Internet connections—will gain access to lobbying tools formerly reserved for Capitol Hill. "We've developed a proposal that when a conference report or a committee report is offered, when the president sends up a message, it has to be electronically available that instant so every American has the same access as the lobbyists, has the same opportunity as the insiders," Gingrich said in a prepared statement.

Another Republican focus will be to reshape the government's information superhighway proposal. A series of Democratic legisla-

tive initiatives to define the I-way were killed in the waning days of the 103rd Congress by opposition from Senate Republican leader Bob Dole of Kansas, along with lobbyists for the Baby Bells.

At the time he killed the bill, called the Communications Act of 1994, Dole promised to reintroduce the legislation in the 104th Congress. Only two real issues are likely to be handled differently in the Republican version: Dole will insist on a more market-driven bill, which is likely to give existing communications and media giants advantages over smaller concerns. And the revised bill will make no provisions for a universal-service fund, which Republicans view as an unjustifiable tax but which Democrats argue would ensure basic information access for those who can't afford the technology.

To reach Gingrich, send E-mail to georgia6@hr.house.gov. To offer feedback on this article, send E-mail to the following address: joe_abcnathy@pcworld.com.



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PC Cards: Is Plug and Play Here?

SPECIAL REPORT



IS PLUG AND PLAY FOR REAL? We tested a dozen credit-card-size fax-modems in the AST Ascentia 800N, AT&T Safari 3151, Compaq LTE Elite 4/40C, IBM ThinkPad 360C (pictured on page 68), TI Travelmate 4000M, and Toshiba T2400CS. The answer was yes *almost* every time.

Last year, *PC World* tested PCMCIA cards and found the promise of Plug and Play to be more fantasy than reality. Serious compatibility issues between cards, notebooks, and driver software caused a high failure rate.

What a difference a year makes! With a few minor exceptions, when we duplicated the test this year, each PCMCIA fax-modem we slipped into the six test notebooks worked immediately. And when

we swapped the fax-modems with hard disk PCMCIA cards, we happily discovered that Plug and Play—the ability of the computer to recognize the inserted card without rebooting—was greatly improved.

Making our lives even easier, the PCMCIA (Personal Computer Memory Card International Association) announced that, effective immediately, PCMCIA cards will now be referred to as PC Cards.

Alas, some nagging implementation problems hinder this

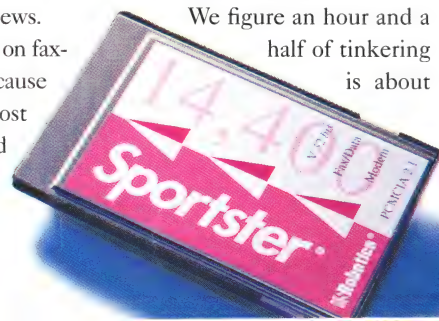
encouraging progress. The poor documentation of many card vendors suggests using the drivers included with their cards. Don't. Most notebooks come with broad driver support, called card and socket services, which you could destroy by installing your PC Card vendor's drivers. More on that later—first the good news.

Our testing focused on fax-modems this time because they are by far the most sought-after PC Card device and usually

offer the most straightforward installation. We checked out a dozen PC Card fax-modems, measuring ease of installation and operation in a half-dozen of the latest best-selling notes.

If it took more than 90 minutes to get a fax-modem card to operate correctly in a notebook, we stopped struggling. Period.

We figure an hour and a half of tinkering is about





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August 1994, WinBook XP
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PC MAGAZINE, Cover Story: Notebooks, Aug. 1994



"...the WinBook XP is a great Windows PC, and an excellent value." "...the fact that you get the amount of performance we did from a battery charge speaks highly of the engineering that went into the WinBook XP."

LAPTOP BUYERS GUIDE & HANDBOOK, First Look, Dec. 1994



"In terms of value,...(the WinBook XP) ranks above many famous-name notebooks. And in terms of pointing devices, it's definitely got them out-numbered." "...if you're looking for a well-equipped, wallet pleasing portable, the WinBook XP deserves a spot on your short list." "...the WinBook with modem is \$700 less than a comparably equipped, modemless (Dell Latitude XP) 475C."

COMPUTER SHOPPER, PC Reviews, Nov. 1994



"The WinBook XP represents the best kind of innovation in the rapidly changing field of notebook computers. It keeps the best of proven technologies, such as a sharp display, and complements them with new technologies, such as those employed to stretch battery life. The long battery life makes it a good choice for anyone who needs a basic notebook that also delivers solid performance."

WINDOWS MAGAZINE, WinLab First Impressions, Dec. 1994



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OTHER MODELS AVAILABLE

Circle 197 on reader service card

as much as a vendor ought to expect from the consumer. Fortunately, of the 72 installations we attempted, 69 took less than 15 minutes.

Once the card was plugged in, we finished the installation portion of the test by dialing up CompuServe or MCI with Windows Terminal and downloading a file. For reasons that we may never discover, Apex Data's Slim Line

Data/Fax Modem wouldn't dial from any COM port at any speed in any socket of the Toshiba T2400CS, although it worked without a hitch on our other five portables. Likewise, the AT&T Paradyne KeepIn-Touch Express couldn't find a COM port it liked on either the Toshiba or the IBM ThinkPad 360C. Again, it worked fine on the other four machines.

To measure Plug and Play capability, we transferred our downloaded files onto either a Maxtor MobileMax 171 or an Epson EDHH170 hard drive.

We had no problems swap-

ping the hard drives for fax-modems and then running the modem with most of the notebooks. Invariably, the card and socket services shipped with our portables recognized our fax-modems.

However, we had to do some extra work to use the hard drives with the Toshiba, the IBM ThinkPad 360C, and the Texas Instruments Travelmate 4000M. Card and socket services on these portables recognized the insertion of both PC Card hard drives but reported that they were not configured and could not be accessed. We

also had to search for the ATA drivers (specific for AT-bus IDE hard drives), figure out how to install them with little help from the manuals, and in the IBM's case edit the CONFIG.SYS file.

Still, such problems were rare. Our conclusion: PC Card fax-modem hardware is solid. Software is another story.

It's Not in the Cards

Because of weaknesses in certain implementations of the



Why PC Cards Can Drive You Crazy

You can call me Jane User, but Pollyanna is probably more accurate. Silly me—I expect my new PC to run just like a car. I don't expect to wake up one rainy day and find a windshield wiper motor is optional equipment for my Dodge.

With this naive notion, I slipped the Maxtor MobileMax 171 hard drive into the PCMCIA slot on my shiny new IBM ThinkPad 360C. Sure enough, the ThinkPad instantly recognized the drive in its Type III slot, but though the Maxtor hard card had been introduced successfully to five other portables that day, IBM's EasyPlay card registry reported that the disk was "not ready," and no software would work with it. Swapping an Epson EHDD170 hard drive for the Maxtor didn't bring any better result.

As I'm no computing novice, I guessed correctly that the appropriate ATA driver needed for my PCMCIA hard drive had not been installed in my CONFIG.SYS file. I set about to find it, or at least word of it. There was no mention of said driver in the user's manual, the special PCMCIA supplement that comes with it, or the README files on the IBM's built-in drive. Nor was the driver hiding in any of the IBM hard drive subdirectories or on the IBM utility disk. I had to run the installation routines to ascertain that fact, and since the routines didn't have

the intelligence to recognize that card and socket services drivers were already installed, I got another EasyPlay icon in a new Windows group for my trouble.

A call to tech support—a maze of four levels of voice-mail hell—earned me a half-hour wait in the queue. When the technician answered, he gave me the matter-of-fact news that IBM doesn't ship PCMCIA hard disk drivers with its ThinkPads.

It does ship ThinkPads with its own PCMCIA drives, and you can find them on the IBM BBS. All the ThinkPad user need do, the techie explained, is call up the BBS, find the right directory (it's 37), download the self-extracting file ATAD0200.EXE to

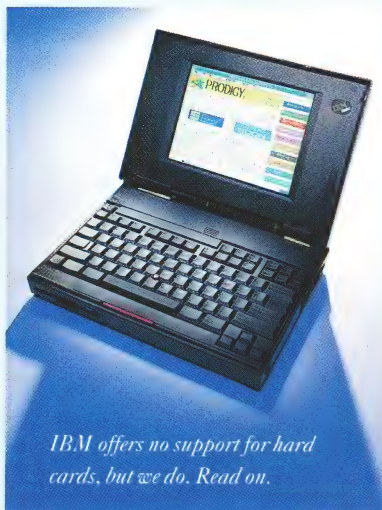
the hard disk, extract the files, use a disk copy utility to copy the decompressed files onto a floppy, and run the DOSINST ATA driver installer. I was amazed at the aplomb with which he rattled off what seemed to me to be the formula for Excedrin headache number one.

A toll call to the IBM BBS (800/772-2227) bought me 20 minutes of registering everything but my hat size and filling out an IBM marketing survey before I was permitted to log on. After a few forays through various screens of menus, I figured out which nonobvious command would take me to the right directory—even though 37 was not on the list of available directories.

After enduring a few more text-packed screens of licensing agreement, I was ready to download the 692,883-byte EXE file, which IBM estimated would take 9 minutes and 23 seconds to deliver. Wrong. It took more than 35 minutes at 9600 baud. Good news for MCI, bad news for my checkbook.

Of course, even after downloading and decompressing the file, it took one more support call to figure out how to use it. IBM held my hand every step of the way, so I got through this process in record time: almost 4 hours over a two-day period.

EasyPlay is a cool name for IBM card and socket services. I wonder if whoever named them ever played with them?



IBM offers no support for hard cards, but we do. Read on.



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Circle 132 on reader service card

TEST REPORT

PCMCIA Fax-Modems Earn a Passing Grade

	Aptex Data	AT&T Paradise	Boca Research	Cardwell Int'l	Kingston Technology	Linksys	Megahertz	NovaLink Technologies	Practical Peripherals	Simple Technology	Smart Modular Technologies	U.S. Robotics
Standard features												
Product	Slim Line Data/Fax Modem	KeepIn-Touch Express	14.4 PCMCIA Boca-Modem	Fax/Modem 144	DataRex	PCMCIA Fax-modem 14.4	14.4 PCMCIA Gold Series Fax Modem with XJack	Nova-Modem 144	ProClass PCMCIA 144	14.4 Data/Fax Modem	ST1414L	Sportster 14,400 PCMCIA
List price	\$249	\$289	\$198	\$229	\$229	\$269	\$299	\$249	\$239	\$219	\$239	\$259
PCMCIA driver	Phoenix V3.0	card enabler	Award V1.0	System-Soft 3.1	System-Soft 3.1	card enabler	System-Soft 3.1	System-Soft 3.1	card enabler	System-Soft 3.1	System-Soft 3.1	System-Soft 3.1
Warranty (years)	5	5	5	3	5	3	5	3	5	5	1	5

Test notebooks/ card and socket services

AST Ascentia 800N/ SystemSoft V2.1	△	△	△	△	△	△	△	△	△	△	△	△
AT&T Safari 3151/ SystemSoft V2.1	△	△	△	△	△	△	△	△	△	△	△	△
Compaq LTE Elite 4/40C/ SystemSoft V2.1	△	△	△	△	△	△	△	△	△	△	△	△
IBM ThinkPad 360C/ IBM Card Services V1.2	△	▽ ¹	△	△	△	△	△	△	△	△	△	△
TI Travelmate 4000M/ Phoenix V2.22	△	△	△	△	△	△	△	△	△	△	△	△
Toshiba T2400CS/ Toshiba Card Services V2.1	▽ ¹	▽ ¹	△	△	△	△	△	△	△	△	△	△
Reader service no.	700	701	702	703	704	705	706	707	708	709	710	711

¹ Took more than 90 minutes to set up.

Methodology

A card earned a passing score if it worked with the PC's installed drivers, if it could be hot-swapped with

hard drive PC cards, and if it could dial into an online BBS and download data. Installation took 15 minutes or less in all tests except as noted.

For more information about all products in this chart, circle reader service no. 907.

standard, we're not ready to conclude that PC Cards are prepared yet for prime time. So, travelworthy card hardware notwithstanding, you're likely

to encounter plenty of potholes on the road to PC Card productivity, and most of them precede a card's insertion into your notebook. These potholes are called drivers.

PCMCIA drivers—the card and socket services—manage a notebook's PC Card socket, act-

ing as a liaison between the PC Card and the notebook as well as providing some fundamental configuration choices. They are usually created by one of a handful of third-party, BIOS-level software developers, notably CardSoft and Phoenix Technologies.

The card and socket services are usually preinstalled on notebooks at the factory. As we found in our tests, these drivers are generally the only ones a notebook user needs.

Unfortunately, PC Card vendors often include card and socket driver disks along with

the third-party communications software they bundle with their fax-modems. These disks typically come with rather strongly stated instructions that would lead the average user to install the fax-modem's version of card and socket services on the portable. (See "Five Tips for PCMCIA Compatibility".)

The skimpy instructions offer little information on general PC Card operation, compatibility with other cards, or any precaution to inform you that the drivers preinstalled on your machine work best and reinstallation might cause conflicts.

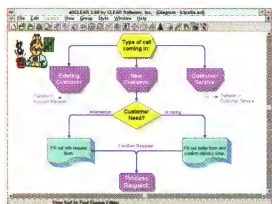
Socket to Me

The problem with installing the card vendor's drivers is that notebook vendors frequently customize the card and socket services software they include with their systems. Installing another set of drivers over these can replace some of the customized PC Card features that the notebook expects, producing unexplained incompatibilities with other cards or even crash-



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Five Tips for PCMCIA Compatibility

You may well encounter inexplicable conflicts—as we did—between your notebook, its card and socket services, and your PCMCIA card software installation routines. This five-step approach to installing PCMCIA cards will likely produce the fewest conflicts.

- 1 Try just plugging the card in first.** If available, use the card and socket services that ship with your portable. Third-party versions may override your notebook's custom drivers.
- 2 That may not work.** The PC vendor's card and socket files may be uninstalled or hiding in an obscure directory on your hard drive or on a separate utility disk. If you can't find these drivers or if the ones you find are less than a pre-3.x version, ask your system vendor for an update. If none's available, ask which third-party card and socket services are compatible with the note's PCMCIA sockets.
- 3 Don't get burned with hot-swapping.** Carefully check the documentation and any README files on your portable for warnings of potential card damage that may occur when multiple PCMCIA cards are used or removed during operation.
- 4 Hard drive cards are special.** It's common for portables *not* to include the driver for ATA hard drives in their CONFIG.SYS files in order to save memory. An installation routine will be included if you're lucky. If not, you may have to call tech support and hand-edit your system files.
- 5 Enablers can actually disable.** PC Card enablers are proprietary drivers that come with certain cards—sometimes coexisting with card and socket services and sometimes replacing them. Check the documentation. If you have any doubts, call tech support.

ing the computer altogether.

Some card vendors also include a proprietary driver, called an enabler, that activates a unique function or provides a memory-saving alternative to loading the entire bundle of card and socket services. Sometimes these enablers are useful

when the originally installed card and socket services of the PC do not respond to a particular card. Such instances are rare among fax-modems, but they occur more commonly with other PC Card devices. However, once you install an enabler, you will not be able to use any

other PC Cards concurrently.

Learning why a card doesn't operate requires an exasperating trial-and-error configuration process. We can't yet give PC Cards a completely clean bill of health because we believe that users are still likely to come up against a wall of misinformation

about just how these drivers are to be loaded, when they should be used, and whose version of card and socket services takes precedence—the notebook vendor's or those provided with the PC Card.

The cause of this confusion lies with the PCMCIA committee that oversees the driver specification, a loose confederation of vendors whose implementation of the specification is strictly on the honor system.

Increasingly, the committee's PC Card members recognize that notebook vendors should be responsible for card and socket services. For now, though, consumers will have to approach the vast array of PC Cards with caution.

—Jeannie Matsumoto

Jeannie Matsumoto is a freelance writer and editor in the computer industry.



Multimedia Nomads: You *can* take it with you. That's the message from the latest wave of PCMCIA cards, which put sound into virtually any notebook PC. The most intriguing is the PCMCIA Sound Card from Media Vision, the first PCMCIA audio card to offer Sound Blaster compatibility. The card uses software emulation so you can hear the sound and fury of most DOS applications and games while you're on the road. One caveat: Protected-mode DOS games, such as Doom, still need access to system resources the PCMCIA bus can't provide—yet. Media Vision's Type II card features FM MIDI capability and an adapter that provides a standard MIDI/joystick port; jacks for line-in, line-out, and microphone; and a manual volume control. The PCMCIA Sound Card, which costs \$299, features the same voice-recognition and WAV- and MIDI-editing software found on Media

Vision's high-end Pro 3D ISA sound card. • **Media Vision Technology**, 800/845-5870. Reader service no. 811

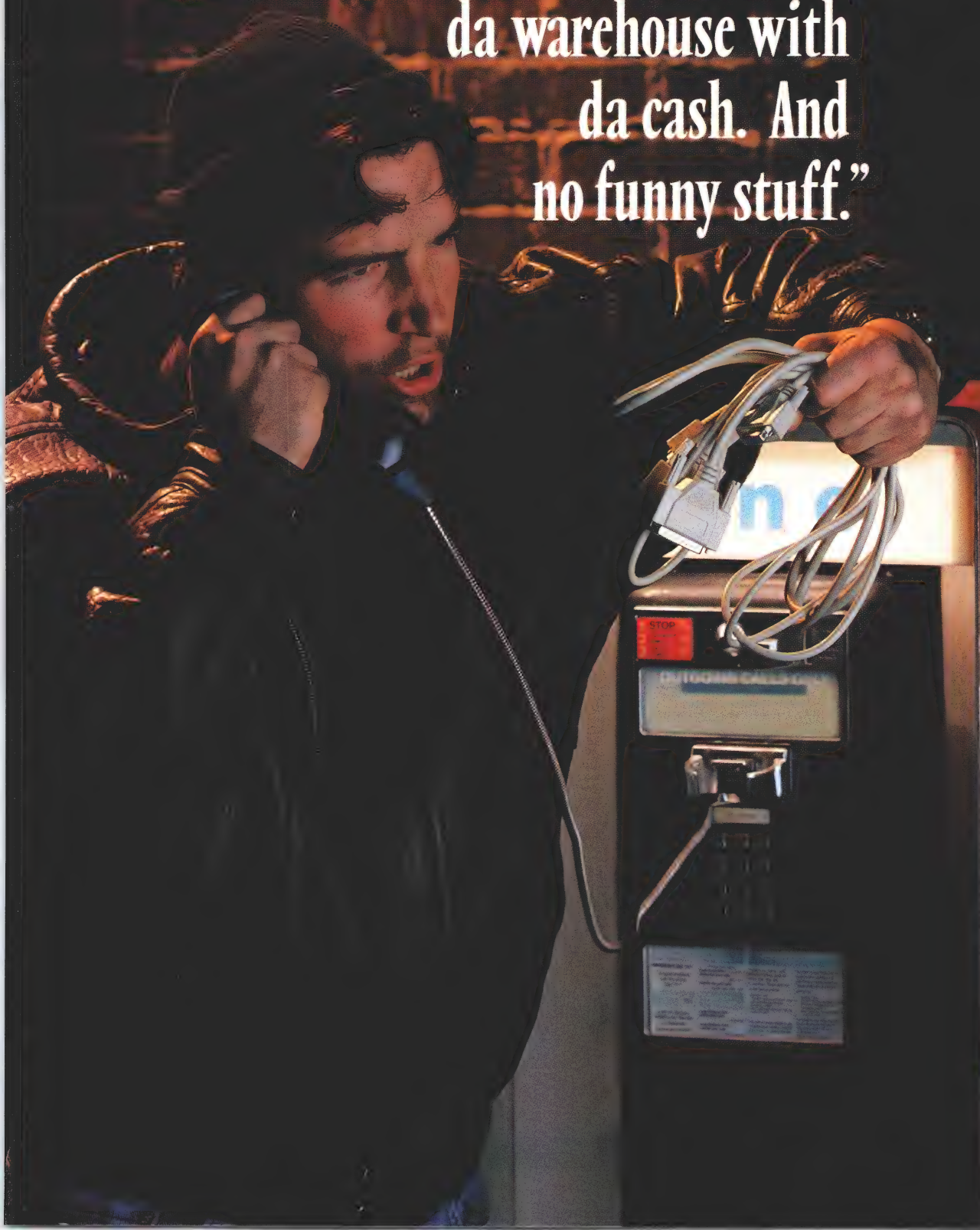
New Media takes a different direction with the Multimedia Combo card, which puts 16-bit sound and a full-function SCSI adapter into a single PCMCIA Type II card. The Combo features Microsoft's Windows Sound System, with audio-

editing and voice-recognition software. The card also lets notebooks attach to SCSI peripherals. The Combo costs \$499. • **New Media Corp.**, 800/453-0550. Reader service no. 812

Turtle Beach brings affordable sound to the road with the \$159 Audio Advantage. While it's limited to 12-bit audio for sampled recording and playback, the PCMCIA Type II card should offer superior MIDI performance due to its V-Synth wave-table MIDI playback, which uses the host PC's processor and RAM to play realistic-sounding MIDI scores. The Audio Advantage has a full suite of audio-editing software. • **Turtle Beach Systems**, 800/645-5640. Reader service no. 813



“If yous ever
wanna talk to your
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da warehouse with
da cash. And
no funny stuff.”





Whatever ... Obviously, Rex Ruthless, notorious cablesnatcher, doesn't know about the new Liberty™ portable PC from Gateway 2000®. Loaded with infrared technology, the Liberty lets me transfer files between my desktop PC and even from Liberty to Liberty. It's a portable PC user's dream! No cable -- and no more blackmail.

I'm just relieved Rex didn't kidnap my Liberty. It's an entirely new dimension of portable computing. In addition to amazing infrared technology, the Liberty touts an impressive 10.4-inch screen — an incredible feature in a 4.2-pound PC with a footprint of only 10 by 8 inches. This display gives me 23 percent more active viewing area than a 9.4-inch screen.

Plus, the Liberty gives me a plethora of other fantastic

features, like its "intelligent battery" that allows for upgradability to future technology including lithium ion.

Best of all, the Liberty is a portable powerhouse packed with features like a 50MHz or 100MHz processor, a whopping 24MB of RAM, removable 720MB hard drive, TelePath™ 14.4 XJACK® fax/modem, Microsoft® Office Professional and carrying case, all for only \$4,799. It's the best combination of portable performance and value available today! You can bet I'd be at the warehouse with loads of cash if Rex had snatched this treasure.

You see, Rex is doing whatever he can to keep my exposé about Gateway's new portables under wraps. But while I was working the PC beat with my trusty Liberty, I got the scoop on the new ColorBook™ from Gateway. It has the same great



combination of color and performance as Gateway's original ColorBook™, but the ColorBook² is souped up with multimedia features including integrated 16-bit sound and speaker, EZ Point¹ integrated pointing device and larger hard drives. Plus, the battery can now be charged while the PC is in use.

Gateway's top-of-the-line ColorBook² DX4-100 Deluxe comes standard with 8MB RAM, 720MB hard drive, TelePath 14.4 fax/modem, carrying case, MS Office Professional and a 10.3-inch dual-scan STN color display, all for only \$3,999.

Enter a new dimension of portable computing with Gateway 2000's new portable PCs by calling today!



Gateway 2000's new portable PCs — the Liberty and ColorBook².



"You've got a friend in the business."™

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A New Dimension In Portable PCs!

GATEWAY 2000 LIBERTY™

- 4.2 Lbs., 10" x 8" x 1.6"
- 10.4" Dual-Scan STN Color Display
- Infrared Capability
- Intel® 486 DX2 or DX4 Processor
- Instant On
- NiMH Battery & AC Pack
- 2 PCMCIA Type II Slots
- EZ Point™ Integrated Pointer
- Removable Hard Drive
- 78-Key Keyboard
- Parallel, Serial, VGA & PS/2® Ports
- MS-DOS® 6.22 & WFW 3.11
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LIBERTY DX2-50

10.4" Dual-Scan STN Color Display, 8MB RAM, 340MB HD, MS Works
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- 10.3" Dual-Scan STN Color Display
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- Removable Hard Drive
- 3.5" Diskette Drive
- Integrated 16-Bit Sound and Speaker
- NiMH Battery & AC Pack
- EZ Point Integrated Pointer
- 2 PCMCIA Type II Slots
- 85-Key Keyboard
- Parallel, Serial, VGA & PS/2 Ports
- Carrying Case
- MS-DOS 6.22 & WFW 3.11
- Microsoft Office Professional 4.3**

COLORBOOK² DX2-50 Deluxe

8MB RAM, 540MB HD, TelePath 14.4 Fax/Modem, Carrying Case, MS Office Professional 4.3**
\$3499

COLORBOOK² DX4-100 Deluxe

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- 3.5" Diskette Drive
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- 2 PCMCIA Type II Slots
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COLORBOOK 486SX-33

Base - 48-Hour QuickShip*
4MB RAM, 250MB HD, 96/24 Fax/Modem, Carrying Case, MS Works 3.0
\$1799

COLORBOOK 486SX-33 Best Buy

8MB RAM, 340MB HD, TelePath 14.4 Fax/Modem, Carrying Case, MS Works 3.0
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HANDBOOK® 486

HANDBOOK DX2-50

2.94 Lbs., SL Enhanced Intel DX2 Processor, 8MB RAM, 250MB HD, EZ Point Integrated Pointer, Leather Carrying Case, MS Works 3.0
\$1999

**48-Hour QuickShip program applies only to the ColorBook 486SX-33 Base configuration. Your PC will be delivered within two business days from the time of order. No additions or deletions can be made to the configuration. Available for approved credit card orders only while quantities last. Domestic U.S. orders only.*

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Hewlett-Packard's Lightest, Fullest-Featured Notebook

When it comes to mobile computing, your budget can never be too rich—or your notebook too thin.

The folks at Hewlett-Packard know this better than anyone; they invented thin in 1993 with the 2.9-pound OmniBook 300. Their latest creation, the OmniBook 600, is just a tad wider around the midriff and a bit thicker, but it's also packing a vibrant dual-scan color screen. And at 3.8 pounds, it's still the lightest full-size notebook you can find. (There are subnotebooks, of course, but you'd be hard-pressed to find one with an 8.5-inch color screen and full-size keyboard that matches the 600's \$2600 base price.)

At 7.28 inches, the 600 is only an inch deeper than the original OmniBook 300. It's also slightly thicker, because the color display requires a larger battery. The great-looking display is supported by a local bus video adapter and a megabyte of video RAM.

HP saved a few ounces by passing up the conventional 3.5-inch floppy drive in favor of an ultrathin sidecar floppy drive that runs off the notebook's

power and attaches to its own port. The 600 includes an infrared I/O port that lets you squirt data to another OmniBook, an HP 200LX handheld, or other devices that support the IrDA (Infrared Data Association) protocol.

For storage, you have a choice of a 170MB or 260MB Maxtor PCMCIA hard drive that fits in the 600's Type III slot. An additional Type III slot on the other side of the machine accepts another Type III device or two stacked Type II devices.

HP's Enhanced Port Replicator, street-priced at about \$300, turns the 600 into a desktop system. Barely wider than the machine, the Port Replicator provides pass-through features for all the ports except the infrared, and adds a PS/2 mouse port, a keyboard, a SCSI-2, and an internal slot for a LAN card.

The 600 comes with your choice of either 4MB or 8MB of RAM, expandable to 12MB and 16MB respectively, and either a 50-MHz 486DX2 or a 75-MHz DX4 processor. (The 4MB systems can also be upgraded to 16MB, but you'll have to replace the existing RAM with two 8MB modules.)

We tested the 75-MHz DX4 version with 8MB of RAM and found the machine ran applications a little faster than our average 75-MHz DX4-based notebooks and just a little slower in disk-intensive work. Even with the color screen and big processor, we got more than 2½ hours of computing from a single charge of the 600's nickel-metal-hydride battery running the system continuously.

—Jeannie Matsumoto



IN LIVING COLOR: HP's new OmniBook 600 features a dual-scan color screen, a pop-out mouse, and a weight of only 3.8 pounds.

The Thinking Person's Mouse

Kensington, known for its trackballs, has developed an intelligent mouse, featuring an innovative design and software that customizes its four buttons to perform a mind-boggling array of functions.

The Kensington Thinking Mouse has a smooth, oval shape with rubberized sides for an easy grip. Two buttons are located in the traditional position at the front, and two more buttons sit behind them.

You program one button to perform the functions typically assigned to the left button, and program the others as you wish. For example, a button can summon a customized menu with frequently used commands or choices. Or you can use a Shortcuts feature to assign common Windows commands, such as paste or print, to any button you choose. A Brilliant Cursor feature jumps to programmable

HotSpots on screen so you can quickly reach specific tools—a menu, an icon bar, and so on. You store all this custom information in a Preference file, so if several people use the same mouse they can save their settings in their own Preference files. Lefties, for example, can use a Preference file to switch sides easily.

The mouse design is so versatile, this is one mouse you can truly call your own.

—Melissa Riofrio

OmniBook 600

Portable color that won't weigh you down.

Hewlett-Packard
800/443-1254

Estimated street price:

\$2599 with 50-MHz 486DX2, 170MB hard drive, and 4MB of RAM; \$2889 with 75-MHz DX4 processor, 170MB hard drive, and 8MB of RAM

Reader service no. 815

Thinking Mouse

Versatile four-button design and sophisticated software.

Kensington Microware

**800/535-4242,
415/572-2700**

Estimated street price: Serial/PS2 \$89.95, Bus \$119.95

Reader service no. 816

TIRED.



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Warranted for life, DynaMO 230MB disks provide an absolutely reliable, inexpensive and high performance way to store and transfer files.

Tired of space limitations? Lost data? Expensive cartridges? The old storage technology is just that. Old.

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standard in high-capacity

data storage, you can reliably store and transport all kinds of large files. Even the most demanding graphics and multimedia applications.

DynaMO's industry-standard, 3.5" 230MB cartridges provide greater storage capacity for about 17¢ per megabyte. So you

can save larger files while you save money.

DynaMO also protects your data better. Since it uses magneto-optical media, DynaMO is immune to the problems that plague removable magnetic media. It's simply the most stable medium you can buy for transporting files or storing them.

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warranty from Fujitsu, the world's second largest computer company.

And no matter what your application, from color separations to multimedia to backing up, DynaMO is faster than ever before. Up to 60% faster in the Mac version equipped with Turbo MO software.

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ROTATIONAL SPEED	3,600 RPM
DISK WARRANTY	LIFETIME
WEIGHT	2 LBS.



The Fastest PC for NT on the Planet Offers 275-MHz Performance

The fastest personal computer on the planet has been sitting on my desk for the past few weeks, and I haven't found a single application that can faze it. It's BTG Action Systems' \$9997 ACTION AXP275 Personal Computer, based on Digital's new 64-bit 275-MHz Alpha AXP 21064A RISC microprocessor. At 555 million instructions per second (MIPS), it performs as fast as many supercomputers, and several times faster than the fastest Pentium.

There must be a hitch, right? Kind of. It runs only Windows NT, but even that isn't as big a drawback as it might be, given the improved performance of the new version 3.5 of Windows NT Workstation. All 16- and 32-bit Windows applications will scream on this machine, but be warned if you run any DOS applications: They execute under NT's slow 286 software emulator.

Every component of this computer is representative of the best technology available. The AXP275 comes standard with a 1GB hard drive, 32MB of RAM expandable to 1GB, and a 2MB secondary cache. The graphics are powered by a

#9GXE64 Pro PCI card with 4MB of VRAM, and a 17- or 21-inch Nokia Multigraph monitor with .25mm dot pitch, resolution up to 1600 by 1280, and a 120-Hz refresh rate.

A PCI Ethernet adapter card fills the second of three PCI slots, leaving one PCI slot for expansion, as well as three open ISA slots. Fast SCSI-2 is included, along with a quad-speed Plextor CD-ROM drive. With a 270-watt power supply and four expansion bays, the AXP275 is a PC that's suitable for use as a workstation or server.

—Joe Abernathy



FULL-THROTTLE COMPUTING: The \$9997 ACTION AXP275 PC features Digital Equipment's speedy 275-MHz Alpha RISC microprocessor and runs Windows NT.

Canon's Fast Color Ink Jet and Low-Cost Laser

Canon's BJC-600e prints color pages at a the rate of one per minute—and that's the fastest you'll find for a 360-dpi color ink jet. Expected to sell for a street price of \$469 to \$499, the BJC-600e can serve as a designated hitter for color jobs like presentation handouts. The other ink jet printers in this price range print color at only ½ page per minute.

The BJC-600e doesn't try to do everything. It concentrates on speed and quality color output, not monochrome. This printer would be a good addition to a small office or home office, or a larger one, provided you already have a good printer for monochrome jobs. In testing, the BJC-600e produced above-average color output on plain paper. It did particularly well with charts, scanned images, and color headlines. Like most color inkjets, the BJC-600e provides its best, brightest color on coated paper.

On the downside, text in newsletter pages sometimes looked fuzzy. The BJC-600e prints monochrome pages slowly, at 3 ppm in 360-dpi resolution, or 1½ ppm in 720-by-360-dpi resolution, and text pages vary in quality.

The BJC-600e's Color Adviser software is a helpful addition. This software acts as a color coach for all of us who aren't design gurus. When you're ready to print, you can activate Color Adviser from the setup dialog box. The program asks quick questions about your document (for example, is it a memo or a presentation) and its audience (for example, industry group or teenagers.) Then it brings up a palette of suggested colors and helps you apply them. Another bundled program, Stationery Store, provides predesigned templates for invitations, letterhead, and greeting cards.

Canon has also introduced the LBP-1260, a 12-ppm, 600-

Canon BJC-600e ink jet, LBP-1260 laser

Ink jet prints 360-dpi color faster than any other; new 12-ppm, 600-dpi laser at a low price.

Canon Computer Systems

800/848-4123,

714/438-3000

Street price: \$499 for ink jet, \$1299 for laser

Reader service no. 818

dpi laser expected to sell for a \$1299 street price. That's just a hundred or so less than the Hewlett-Packard LaserJet 4 Plus, another 12-ppm, 600-dpi laser, which sold for about \$1400 in early November. The Canon laser comes with PCL 5e and offers a PostScript Level II option for a street price of about \$450.

All Canon printers now include a two-year warranty.

—Laurianne McLaughlin

ACTION AXP275 Personal Computer

As good as it gets if you need speed.

BTG Action Systems

703/641-1200

List price: \$9997 with 17-inch

Nokia monitor, 1GB hard

drive, and 32MB RAM;

\$13,997 with 21-inch moni-

tor, 2GB hard drive, and

64MB RAM

Reader service no. 817

One-Pound Printers From Citizen and Pentax

First there were subnotebooks, and now there are subprinters. These 1-pound devices can make life easier for mobile PC users who need to produce hard copy on the road.

The first shots in what's likely to be a furious subprinter war have come from Citizen America and Pentax Technologies. Both have rolled out printers that weigh in at just over a pound, although the two units take radically different technological approaches. There is, of course, one incontrovertible reality when it comes to making tiny printers: A standard piece of paper is still 8.5 inches wide. But each company has done an amazing job of making its printer incredibly small.

Citizen isn't new to the small-printer market. The company's PN48 transportable printer has been out for a couple of years, but the new PN60, which replaces it, is about half its size. It's 10 by 1.85 by 2 inches and weighs 1.1 pounds. Add the optional rechargeable battery, and at 1.5 pounds it still doesn't exactly tip the scales.

The PN60's output is impres-

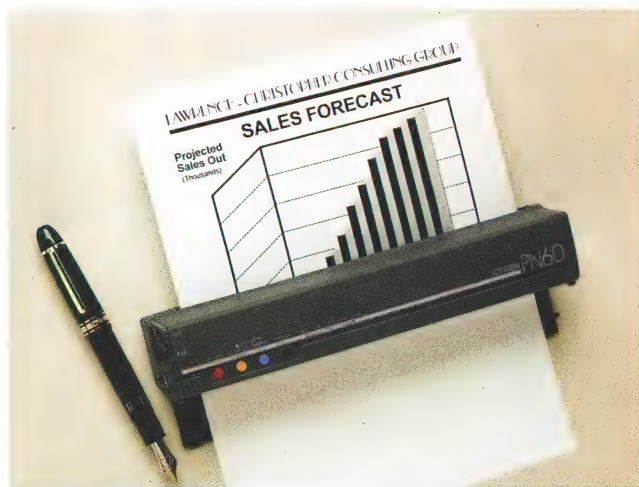
sive, approaching the laser quality that Citizen claims on standard paper. It prints graphics at up to 360 by 360 dpi, and emulates the Citizen GSX, Epson LQ, IBM ProPrinter, and Apple StyleWriter. There's no sheet feeder; you feed the pages one at a time. And the PN60 certainly isn't designed for high-volume operations, since it takes about 30 seconds to do a page of plain text, and considerably longer for graphics.

Pentax, better known for its scanners, has chosen a technology very different from Citizen's for its entry into the printer market. The PocketJet thermal printer uses an output technology similar to that of a fax machine. Don't let that put you off, because the quality is considerably higher than a fax's. The PocketJet includes HP LaserJet IIP (PCL 4) emulation, and prints at 300 dpi. It's just a hair smaller and lighter than the Citizen, and prints a bit faster, too—about 3 pages a minute for text. A rechargeable battery, which delivers about 30 pages per charge, is included. As with the Citizen, you'll have to feed one sheet at a time.

Although the paper that came with the unit I reviewed was a test batch, it was considerably more substantial than the flimsy fax rolls we're accustomed to; it came in flat sheets too, instead of a roll. Still, it is thermal paper, and I wouldn't hand such a printout to an important client.

Neither the PN60 nor the PocketJet is inexpensive; you'll have to pay for convenience. Nevertheless, these cutting-edge subprinters are incredibly handy for today's ever-elusive mobile professionals.

—Stan Miastkowski



PINT-SIZED PRINTER: Citizen's new PN60 portable printer weighs a mere 1.1 pounds (1.5 pounds with an optional battery).

Colorado Tape Drives Add Capacity

Back in the days when you only had about 200MB of data on your hard drive, your 250MB Colorado Jumbo 250 internal tape backup was perfect. But your hard disk has become so loaded down with applications and data that a single tape no longer holds a full backup, even with data compression. Say good-bye to unattended backups. You'll have to wait and feed in a second tape, or decide what to leave out, or back up less frequently.

If your drive capacity tops out at around 300MB or so, you've got a way to increase your 250's compressed capacity to about 340 MB, thanks to extended-length DC2120XL tapes from 3M and a low-cost software upgrade from Colorado. The \$39.95 single-disk upgrade includes Colorado Backup Lite 2.02 and a preformatted Colorado DT-350 tape minicartridge. Users of Colorado Backup Lite can upgrade to the more robust Colorado Backup

250-350 Upgrade Kit

Gives your 250MB tape backup drive 340MB of backup capacity.

Colorado Memory Systems

800/845-7905

303/669-6500

List price: \$39.95 for tape plus upgrade to Backup Lite, \$42 for upgrade to Backup for Windows 2.0, \$19.95 upgrade for Backup 2.0 users, \$25 for DT-350 tapes

Reader service no. 822

for Windows 2.0 for \$42. Backup for Windows users can obtain the software upgrade for \$19.95. The DT-350 tapes sell for about \$25.

A less attractive option is to retire your trusty 250MB tape drive and buy a new, higher-capacity unit. For instance, Colorado's 350MB Jumbo 350 or Trakker 350 drives will run you \$199 and \$399 respectively.

—Rex Farrance

Citizen PN60

1.5-pound, plain-paper printer with 360-dpi output.

Citizen America Corp.

310/453-0614

List price: \$429

Reader service no. 819

Pentax PocketJet

1.1-pound printer requires special thermal paper.

Pentax Technologies

800/543-6144

List price: \$499

Reader service no. 820

Introducing 1200 dpi printing from Lexmark. We're not re-inventing the wheel. Just the laser, the toner and the print quality.

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At ordinary laser prices. Lexmark invented the 600 dpi standard. Now we're surpassing it with the Optra™ family of high-performance, network-ready laser printers. The first desktop printers with true 1200 x 1200 dpi* printing. That's four times the sharpness of an ordinary 600 dpi printer.



The Optra's sleek exterior merely reflects the technical advances inside. Lexmark's print engine has been redesigned from the ground up. Even the toner has been reformulated. PostScript™ Level 2 and enhanced PCL®5 emulations are standard. The result: incredibly sharp graphics and



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*1200 dpi requires additional memory for complex files. Lexmark products are manufactured under the ISO 9002 approved quality process. The Energy Star emblem does not represent EPA of Adobe Systems, Inc., which may be registered in certain jurisdictions. Lexmark, Optra and MarkVision are trademarks of Lexmark International, Inc. © 1994 Lexmark International, Inc.



beautiful, crisp text from virtually any application.

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Circle 178 on reader service card

When all else fails

Starting at
\$119

There are three types of computer users: those who have lost data due to a power problem, those who are going to, and those who have protected themselves against the inevitable surge, blackout or brownout with the most reliable UPS they can buy: Back-UPS by APC. In fact, editors and users alike agree that if your system demands absolute reliability, you can depend on APC Back-UPS.

According to a study by Bell Labs, undervoltages represent the overwhelming majority of power problems likely to hit your computer. The question is not if a failure will occur, but when. Whether due to construction, wiring, weather, other office

APC Voted most reliable by 3-to-1

Tripp

Best



In a recent poll by PC Magazine's MagNet, APC was voted the most reliable UPS manufacturer by a 3-to-1 margin. That's dependability that will see you through years of unmatched power protection.

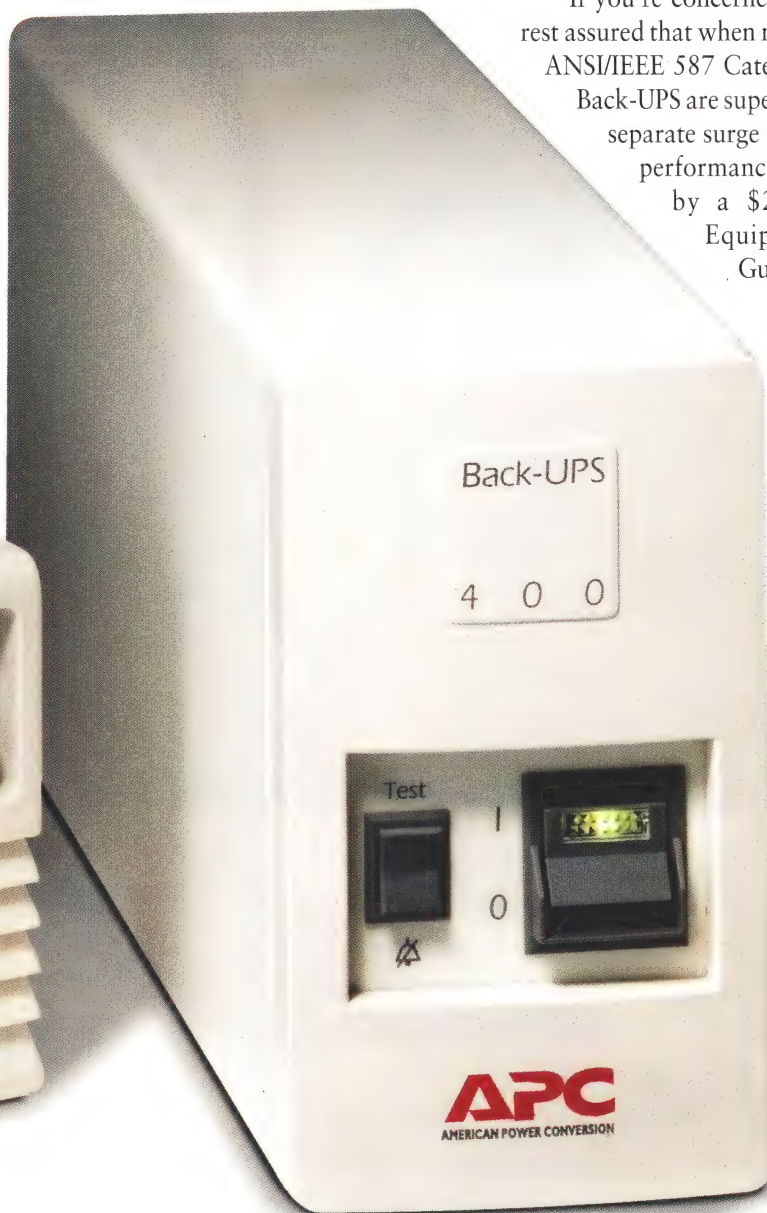
"The clear winner in price performance...it's unbeatable..."



August 1993
APC Back UPS 1250

equipment, or accidents, power problems are as inevitable as death and taxes. That's why you need instantaneous battery backup power from the Back-UPS to prevent data loss, hard disk crashes, and hardware damage.

If you're concerned about lightning, rest assured that when measured using the ANSI/IEEE 587 Category A test wave, Back-UPS are superior to virtually all separate surge suppressors. Surge performance is even backed by a \$25,000 Lifetime Equipment Protection Guarantee.



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Test

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APC
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**LIFETIME
EQUIPMENT
PROTECTION**

\$25,000

FOR AS LONG AS YOU OWN THIS PRODUCT, IF YOUR PROPERLY CONNECTED EQUIPMENT IS EVER DAMAGED BY AN AC SURGE, INCLUDING SURGES DUE TO LIGHTNING, APC WILL REPAIR OR REPLACE OUR PRODUCT AND UP TO \$25,000 OF CONNECTED EQUIPMENT (SEE POLICY FOR DETAILS, VALID IN U.S. AND CANADA ONLY).

Back-UPS® prevail



"All other brands of UPS die regularly in this lightning prone environment. My APC won't die!" said Paul Sisilli, Systems Analyst, City of Port St. Lucie. "With other brands, users don't find out until it is too late. The power interruptions here are very hard to live with. The other brands are dying off. Typically they last just beyond their warranty period. My Back-UPS is going on three years...no other brand is as reliable."



Don Truax knows first hand about Back-UPS reliability: "It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked. Each morning I get a surge down the line and both APC's hate it - they simultaneously 'holler 'n clamp' while my 'Brand T' quietly sleeps in. I've relegated that unit to non-critical household stuff like my VCR."



Andrew Wargo, Manager at Baxter Land Company, tried two other brands before Back-UPS. "One lasted a few days, a second one went up in smoke after 48 hours, a third lasted less than 24 hours! I then bought my Back-UPS for less than half of what I had paid for the others. We've purchased three more Back-UPS and for the past 14 months they've been just hummin' away on the same power line that was eating the other brands alive!"

If you're protecting a network server, a communications interface port (on models Back-UPS 400 and higher) provides the security of an automatic shutdown to all major OS including NetWare, Windows, Windows NT, LAN Server, LAN Manager, LANtastic, SCO Unix, OS/2, Banyan Vines, AppleShare/System7 and more, so your data is safe whether the system is attended or not. (PowerChute software and interface kits sold separately.)

And since data processed on networked clients needs protection too, the \$139 Back-UPS 280 provides an economical solution for all your LAN workstations. And if you have a new green PC, the price is even better at \$119 for the new Back-UPS 200.



Discovering how essential Back-UPS protection is



Back-UPS (L to R)	Application	Sugg. List
200	Green PCs, small desktop systems	\$119
280	Desktop systems, LAN nodes, POS	\$139
400	Desktop 486, 386 systems, servers	\$199
450	Tower 486, 386 systems, servers	\$254
600	Heavily configured systems, CAD/CAM workstations	\$359
900	Multiple systems, longer runtime applications	\$529
1250	Multiple systems, LAN hubs, small minis, telecom equipment	\$689



More than...
2,000,000
Satisfied Users

APC has won more awards for performance and reliability than all other UPS vendors combined...including five consecutive LAN Times Readers Choice awards...



can be hard...if you wait for the next storm to roll through. But discovering how affordable it has become is easy...

Call today and find out (the easy way) why more than 2,000,000 satisfied users bank on Back-UPS from APC. With more awards than all other brands combined, field-proven reliability, and a two year warranty, Back-UPS are power protection you can purchase with confidence.



AWARD-WINNING FEATURES

Instantaneous backup power beats blackouts and brownouts

Unmatched lightning (tested to UL1449) and surge protection for maximum hardware safety

Network-grade line conditioning and EMI/RFI filters prevent glitches

LAN Interface (on Back-UPS 400 and up) provides automatic shutdown to all major OS: Windows, NT, NetWare, LAN Server, LAN Manager, LANtastic, Unix, OS/2, Vines, AppleShare/System7 and more.

Site diagnostics automatically spot missing ground and reversed polarity, two common miswirings which usually require an electrician's visit to diagnose.

Option switches allow you to customize transfer voltage and alarm settings.

Test Switch for ongoing peace of mind.

2 year warranty and full safety approvals including ISO9001.

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Hot Swappable, User Replaceable Batteries reduce service time, costs by allowing safe removal and replacement of exhausted batteries, while your system stays running.

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Circle 45 on reader service card

Dept. P3

Two Add-Ons Help Manage Multimedia Presentations

Presentation packages such as Microsoft's PowerPoint and Software Publishing Corporation's Harvard Graphics have revolutionized the way people do business presentations. Rather than assembling a boring series of ho-hum slides or overheads, you can create a PC-based multimedia presentation for your audience.

Unfortunately, building a multimedia presentation is no trivial task. Midisoft's Presentation Partner 1.05 and SPC's Harvard Spotlight 1.0 can make things easier.

Presentation Partner 1.05 is an add-on utility for Harvard Graphics, PowerPoint, Lotus's Freelance Graphics, and MacroMedia's Action. The program includes a collection of pre-designed presentations called ShowScripts. Each ShowScript contains music, animation, transition effects, graphics, and placeholders for text and video clips, which you add yourself. You'll find ShowScripts on a va-

riety of business topics, including Annual Report and Training, and even personal topics, such as Baby Album.

Distributed on CD-ROM, Presentation Partner includes AskMe Information Center's Super Show and Tell 1.1, a simple yet effective application for creating multimedia presentations. Presentation Partner also provides tools for editing and recording WAV and MIDI audio files, and has a large selection of clip media.

Harvard Spotlight 1.0 is a different beast altogether. This presentation manager grabs slide-show presentations from Freelance Graphics, PowerPoint, or Harvard Graphics and splits them in two. Your audience watches the regular presentation on one PC, while you view a presentation management screen on a second system. The two systems are connected via a null-modem cable included with the package.

As your masterpiece unfolds, the second system gives you a detailed screen that shows the current slide in the presentation, a preview image of the next slide, your presentation notes, and other information.

Spotlight, though, requires two PCs. If your client doesn't have a PC available, you must schlep two notebooks in addition to your other materials.

While both the \$149.95 Presentation Partner and the \$129 Harvard Spotlight have useful features, they seem pricey for add-ons, particularly since the programs they enhance cost only a couple hundred dollars more. Nevertheless, both are handy for those who do presentations often.

—William Harrel



MIDISOFT'S PRESENTATION PARTNER CREATES MULTIMEDIA TEMPLATES for several popular presentation programs.

Flowcharting Made Easier

AllClear III makes it easy to create flowcharts, organization charts, and other business drawings. The program starts by asking which type of diagram you wish to create; choices include a process flowchart, an organization tree chart, or a fishbone diagram that expands vertically rather than horizontally. Select one, and a pre-drawn, editable template appears on screen. If you want another chart type, the program includes 26 templates and 100 sample charts.

AllClear's interface has a variety of buttons that simplify many steps involved in creating and modifying your diagrams. Global and local style buttons let you change the color, font, or orientation of your diagram or objects within it. A fit-to-page button shrinks large drawings onto a single page. And a touch-up button makes it easy to rearrange boxes by automatically redrawing connector lines in the most logical way possible. The

AllClear III for Windows

Automated flowcharting saves time.

Clear Software, Inc.

800/338-1759,

617/965-6755

List price: \$299,

upgrade \$99

Reader service no. 752

helpful Quick Start guide provides a detailed walk-through of the program's features.

For the artistically challenged, AllClear includes 150 predrawn shapes, 100 pieces of clip art, and a shape editor to help you create custom shapes.

The program also comes with a file viewer that lets other users see your diagrams even if they don't happen to have AllClear installed on their computers. You combine the diagram and the viewer into an EXE file and distribute that combined file to the other users.

—Anita Hamilton

Presentation Partner 1.05

Predesigned presentations for use with other programs.

Midisoft

800/776-6434,

206/881-7176

Price: \$149.95 (\$99.95 if you own a supported presentation package)

Reader service no. 750

Harvard Spotlight 1.0

Lets you run a presentation on two PCs.

Software Publishing Corp.

800/234-2500,

408/986-8000

Price: \$129

Reader service no. 751

Introducing Delrina WinFax PRO™ 4.0. You'll wonder how you ever faxed without it.



Meet the fastest, easiest, most convenient way ever to handle all your faxing – new Delrina WinFax PRO™ 4.0, the latest version of the best-selling fax software in the world. The only one that combines the advanced faxing features you need with astonishing new ease and usability.

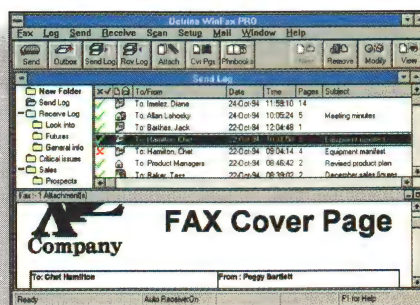
"The best fax package there is."

That's what *PC/Computing* said about version 3.0. And now we've made it even better.

Starting with the revolutionary new streamlined interface that makes it simpler than ever to do anything you'd do with a fax machine, and a lot more. Like sending faxes directly from within any Windows application as easily as you'd print. Or organizing sent and received faxes in convenient

folders. Or converting faxes into word processing documents with OCR.

There's added convenience with dozens of ready-to-use cover pages. Fax phonebooks that are drag-and-drop simple. And improved fax annotation tools that even let you add your signature.



Based on extensive usability testing, the new customizable interface includes folders for organizing sent and received faxes.

Don't try this with a fax machine.

Imagine faxing, not just an image of a document, but the actual file itself*, so it's ready to be used in an application. Imagine sending a single document that is automatically faxed to some people and e-mailed to others.

Now imagine you're on the road, and WinFax PRO automatically forwards faxes to you. Or lets you retrieve faxes sent to your regular fax number*. And there's more.

Get new Delrina WinFax PRO 4.0 today and put faxing where it really belongs – on your PC. Call now for information or to upgrade from WinFax PRO or WinFax LITE™. Or see your local dealer to upgrade immediately.

DELTRINA
1-800-268-6082



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*Requires Class 1 modem.

Circle 37 on reader service card

Stacker for OS/2 Instantly Converts DoubleSpace Drives

Thinking of upgrading to OS/2 Warp, but afraid your compressed drive won't work? Worry no more. Stac Electronics' Stacker 4.0 for OS/2 & DOS instantly converts Stacker 3, SuperStore/DS, DoubleSpace, and DriveSpace disks so they'll work with OS/2. And since it has drivers for both OS/2 and DOS, this version of Stacker will work in dual systems that run either operating system. (Although the previous version of Stacker for OS/2 was numbered 1.0, the new version is called 4.0 to show that it offers the same features as Stacker 4.0 for Windows.)

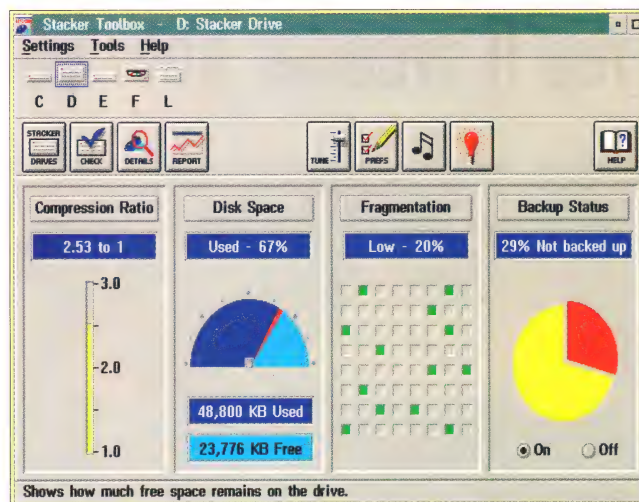
Stacker for OS/2 & DOS is compatible with Stacker 4 for Windows and sports a similar user interface, allowing OS/2 users to view and modify their compression setup from a graphical control panel. According to Stac, the new version has been optimized for OS/2 and shares version 4.0's 2.5:1 compression ratio. Version 4.0 can also save important system files to the uncompressed portion of a hard drive, a critical safety feature if the compressed volume becomes corrupted.

One drawback is that Stacker doesn't support OS/2's native High Performance File System (HPFS), which supports long file names in OS/2 but is incom-

patible with DOS and Windows. And you still must use a DOS text mode interface to install the program and defrag a Stacker compressed volume. If you don't have DOS on your PC, Stacker comes with a licensed, bootable copy of Novell DOS 7. Stac claims that single-tasking DOS is a better environment for sensitive installation and defragging tasks.

If you're looking for fast, powerful disk compression that is compatible with both DOS and OS/2 Warp, Stacker 4.0 is your only choice.

—Lou Miranda



DISK COMPRESSION FOR OS/2: Stacker 4.0 for OS/2 and DOS has a graphical control panel for modifying your compression setup.

Do-It-Yourself Tools for Business Entrepreneurs

If the thought of scratching out a 100-page business plan or an employee manual makes you break into a cold sweat, you can relax. Jian's BizPlanBuilder 5.0 and EmployeeManualMaker 3.0 ease your writer's block and hold your hand through these processes.

Entrepreneurial types may be familiar with earlier versions of the \$129 BizPlanBuilder, a 6-year-old Windows and DOS package that provides a template approach to business planning. The software walks you through just about every possible permutation in preparing a plan, from the broad perspective of preparing a "vision statement" to the minutia of calculating equipment depreciation.

BizPlanBuilder's setup is a mite confusing: Because the program works with your existing word processing and spreadsheet programs, it doesn't have its own Windows icon. Just open one of 12 BizPlanBuilder

template forms in your favorite word processor or spreadsheet, then answer the questions or fill in the blanks. Version 5.0 lets you add little niceties to wow bankers and investors, such as showing financial estimates on a fiscal year calendar or estimating sales volume projections by season.

If your business is already past the larval stage and you're more concerned with keeping employee issues straight, try Jian's \$139 EmployeeManualMaker 3.0. The software templates help you prepare a personnel policy handbook from within most popular word processors. The package now covers 130 policies and procedures, including state and federal laws on employee issues such as AIDS, disabilities, jury duty, and grievances. However, there's no section covering employee performance reviews.

To get the most out of BizPlanBuilder 5.0 or Employee-

BizPlanBuilder 5.0

Step-by-step guide to writing a business plan.

List price: \$129

EmployeeManualMaker 3.0

Helps small businesses create employee manuals.

List price: \$139

Jian Tools for Sales

800/346-5426

Reader service no. 754

ManualMaker 3.0, you'll need a fair amount of self-discipline. It's too easy to use the program's canned text examples instead of thinking for yourself. And not every manager will like Jian's cookie-cutter approach to creating business plans or employee policies. But considering that a large amount of valuable information is amassed in each package, it's best to stop procrastinating and just dig in.

—Bronwyn Fryer

Stacker 4.0 for OS/2 & DOS

Powerful disk compression
for OS/2 Warp.

Stac Electronics

800/522-7822,

619/794-4300

Street price: under \$100

Reader service no. 753



Put all your old records on tape.

TAPE BACKUP ISN'T ONLY FOR PROTECTING YOUR new critical data. *Old* records are important, too!


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386-based PCs



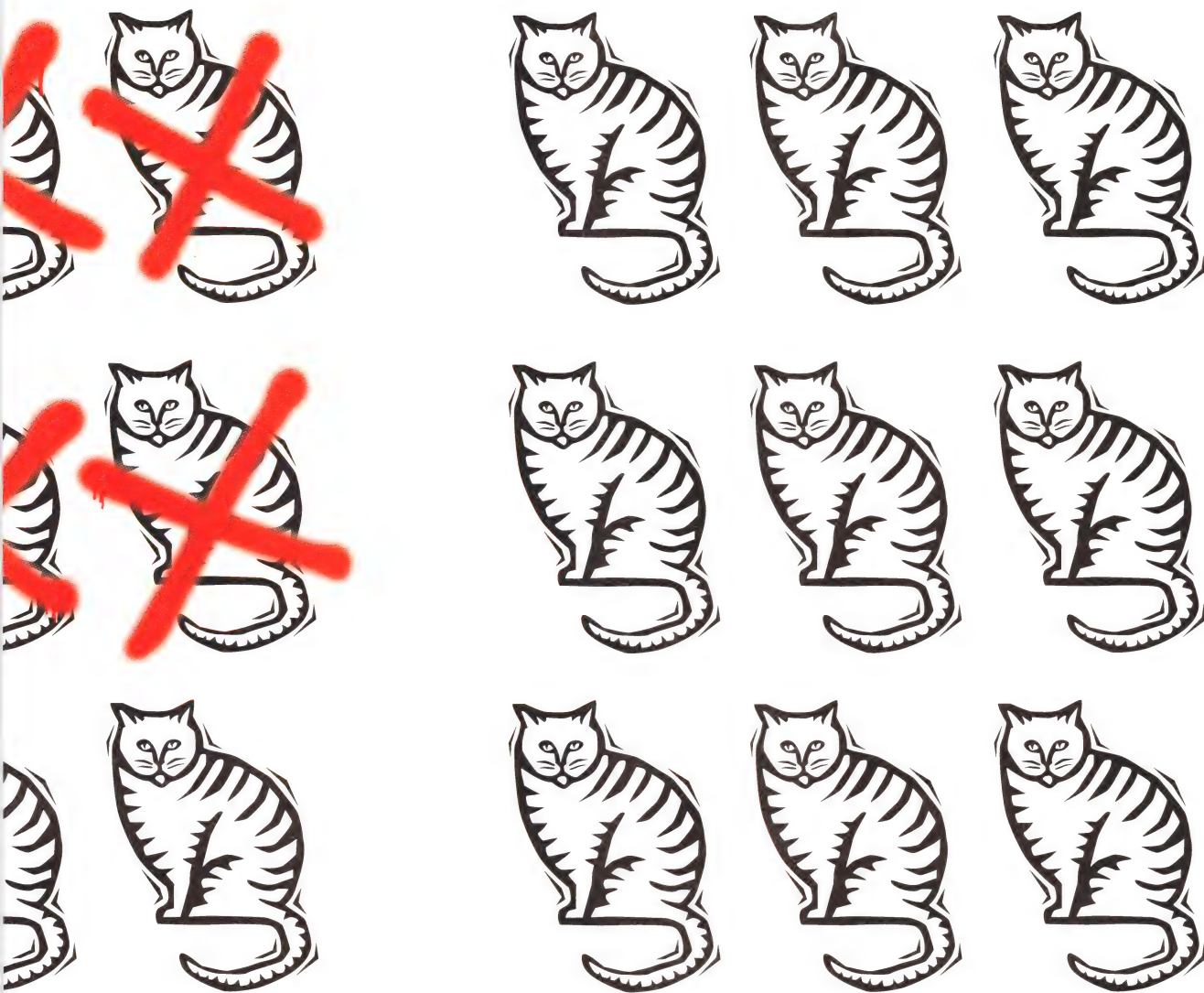
486-based PCs

Let's say compute



Some computers have nine lives left. Others don't. That's why if you're buying a PC today, you should only be considering Pentium™ processor-based PCs.

The reason is simple. A more powerful PC lasts longer, since it will still have plenty of horsepower when tomorrow's applications come along. And most new Pentium processor-based systems also include the latest PC technology — like



Pentium™ processor-based PCs

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That, plus the fact that these PCs are now so affordable, makes this a great time to buy a Pentium processor-based PC. Especially when

you'll be getting a system that performs so well. Today. And several lives from now. For more information call 1-800-626-6788, Ext. 213.

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CleanSweep Uninstalls Windows Programs Quickly

Quarterdeck's new Windows uninstall program, CleanSweep for Windows, is remarkably similar to MicroHelp's popular UnInstaller 2.0 for Windows (see *New Products*, May 1994). Both programs can delete Windows application programs and system components (display drivers, fonts, INI files, and so on), as well as unused and duplicate files.

CleanSweep 1.0 for Windows

Fast uninstall utility for Windows users.

Quarterdeck Office Systems, Inc.

800/354-3222

Street price: \$39 to \$49

Reader service no. 756

Deleting programs and files can be a risky business—zap the wrong file and you might not be able to load a needed application program or even Windows itself. CleanSweep goes to great pains to prevent mishaps. It includes a database of files that should never be deleted (such as SYSTEM.INI and WIN.INI) and automatically backs up all deleted files in case you need them later.

CleanSweep is thoughtfully designed. The four main modules—Uninstall, System, Find Unused, and Find Dups—are clearly described on screen. If you decide that CleanSweep is not for you, the program even comes with a module for uninstalling itself.

There is room for improvement, though. Unlike Solid

Oak Software's Disk Historian (*New Products*, October 1994), CleanSweep doesn't track the usage of each file on your hard disk, and it finds only files that have a high probability of being

unused. (Quarterdeck is considering including file-usage tracking in a future upgrade.) Still, for what it does, CleanSweep does very well.

—Reid Goldsborough



RUNNING OUT OF HARD DISK SPACE? Quarterdeck's CleanSweep uninstalls Windows apps and weeds out unneeded Windows files.

d-Time10 Gives CD-ROMs a Dose of Performance

If your CD-ROM drive is struggling to keep up with demanding multimedia and database applications, a unique software-only upgrade may be the answer.

Ballard Synergy's d-Time10 speeds CD-ROM applications

by putting some new twists on an old idea: caching. Typically, caching speeds program performance by storing in RAM the data that the CPU will most likely need; d-Time10, however, takes a slightly different approach by caching CD-ROM

data to your hard disk instead.

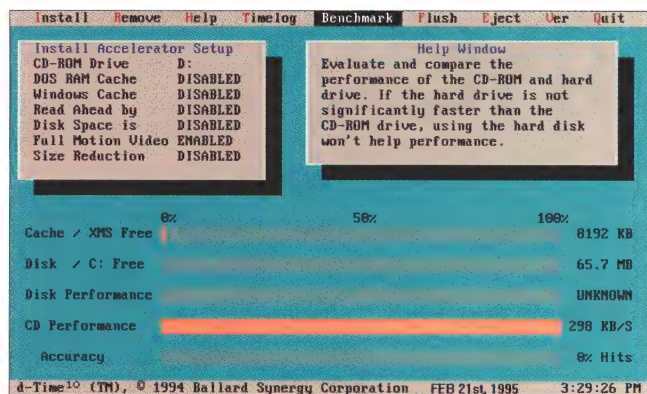
d-Time10's caching technique has several benefits. For one, a hard disk cache can be much larger than a RAM cache. The 45MB d-Time10 cache that I used was much more effective than a 2MB SmartDrive cache, which is RAM-based. Better yet, the d-Time10 cache retains its data when you turn off the computer. And you can even cache data from several CD-ROMs at the same time.

Another unique feature of d-Time10 is its ability to take snapshots of data that's already in the cache. These snapshots, called 'Timelogs,' can be used to preload the cache prior to running a CD-ROM-based application. d-Time10 comes with Timelogs for several multime-

dia titles, and you can easily create your own Timelogs to share with other d-Time10 users.

You'll need at least a 386-based PC, 2MB of RAM, DOS 4.01, and 20MB of free disk space. If your system fits this bill and you want to wring more performance out of your CD-ROM drive, d-Time10 is definitely worth looking into.

—Jeff Noxon



D-TIME10 BOOSTS CD-ROM PERFORMANCE by caching CD-ROM data on the hard drive. It lets you monitor system performance, too.

d-Time10 1.0

Boosts the performance of your CD-ROM programs.

Ballard Synergy

800/754-1203,

206/656-8070,

List price: \$69.95

Reader service no. 757

M.Y.O.B., DacEasy Take Different Paths to Business Accounting

Your desk is buried under a mound of paperwork so enormous that someone could plant a flag on it and proclaim it Invoice Mountain. If you could choose between entering those transactions in an accounting program or visiting the dentist, would you opt for the root canal? If so, consider the latest Windows versions of M.Y.O.B. Accounting and DacEasy Accounting.

BestWare's M.Y.O.B. Accounting 5.0 makes it easier to create your own accounting system. It comes with a getting-started videotape that's free of accounting jargon, a CD-ROM full of helpful video tips, and an interactive interview that helps you set up your books. It also has accounting templates for about 100 different kinds of businesses, ranging from advertising to zoo keeping, and a book of financial tips for managing a business.

The M.Y.O.B. interface is unique among accounting programs, with a graphical, flowchart approach to guide you through the bookkeeping process. And new features in ver-

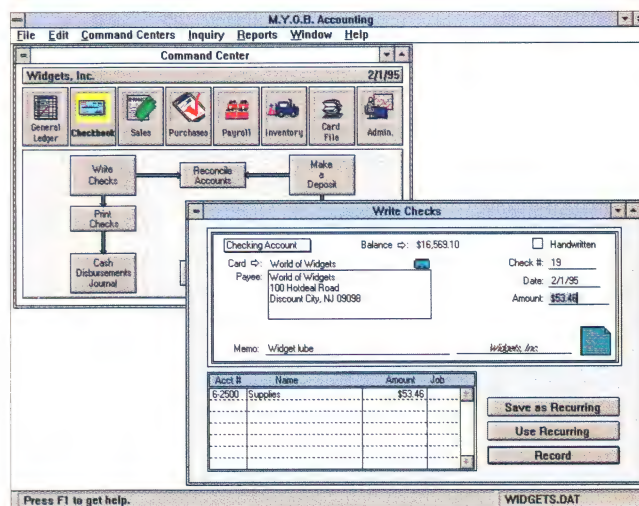
sion 5.0 make it easier to manage your records. For instance, the Easy-Fill tool automatically retrieves a record after you type the first few characters.

This \$119.95 program is a good choice for lazy bookkeepers. If you can't be bothered with keeping track of accounting tasks, M.Y.O.B. can examine your accounting database and create a to-do list for you. Each list item in the database has an arrow next to it. When you click the arrow, the program performs the task, such as paying an overdue bill.

Many people perceive the accountant as a lonely nerd with coke-bottle eyeglasses, perched on a stool in a corner of the office, pounding away at a calculator. But accounting is more than just tallying numbers; it's communicating what those numbers mean. And communication is where DacEasy Accounting 2.0 for Windows excels.

Mail Merge and More

DacEasy integrates nicely with other Windows programs. In conjunction with Microsoft Write, DacEasy lets you create



M.Y.O.B. ACCOUNTING 5.0 USES A FLOWCHART PARADIGM to help you complete common tasks, such as writing checks.

mail merge letters for your customers and suppliers. For example, you might use this feature to create collection letters or to announce special sales.

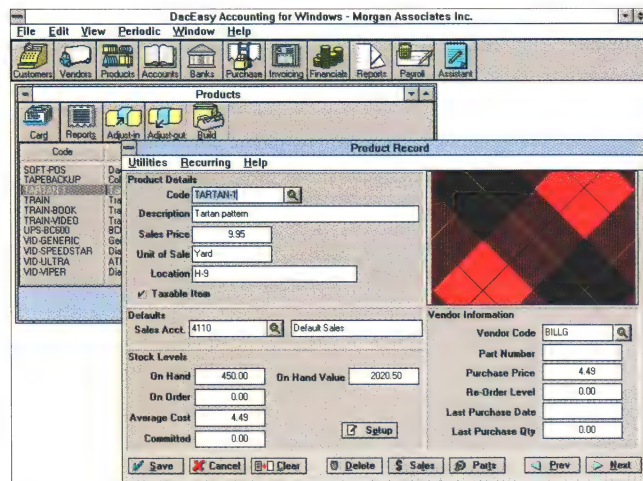
There's also a DDE (dynamic data exchange) link to WinFax Pro, so you can quickly fax invoices, statements, and purchase orders instead of relying on regular mail.

DacEasy 2.0's contact manager now includes a phone dialer and a call logger. You can review a history of your calls to a certain customer or supplier, then use the program's Time Minder scheduler to enter a follow-up call date. Another new feature is the Personal Assistant, a to-do list utility that helps you track accounting tasks.

But DacEasy isn't simply a glorified contact manager. You can manage your business finances with version 2.0, which includes several enhancements to the program's number-crunching capabilities. For instance, you can charge interest to delinquent customers—though not even DacEasy can force deadbeats to pay up.

DacEasy now lets you include bit-mapped images in your inventory records. I'm not sure how many businesses will go to the trouble of scanning in product photos or drawings, but it's a nice feature not usually found in a \$149.95 accounting program.

—Richard Morochove



DACEASY ACCOUNTING 2.0 FOR WINDOWS now lets you include bit-mapped images in your inventory records, useful for product catalogs.

DacEasy Accounting 2.0 for Windows

Accounting package with powerful communications tools.

DacEasy, Inc.

800/322-3279,

214/248-0205

List price: \$149.95

Reader service no. 758

M.Y.O.B. Accounting 5.0

Automated features for users who hate accounting.

BestWare, Inc.

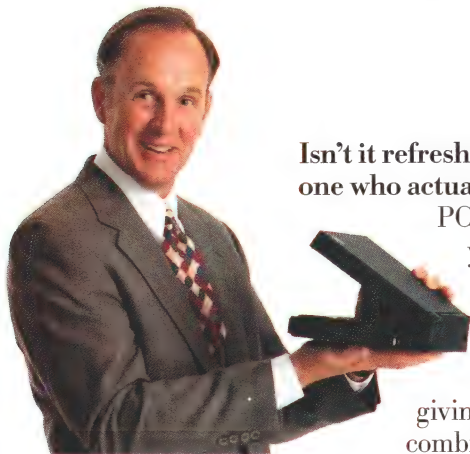
800/322-6962,

201/586-2200, ext. 300

List price: \$119.95, with payroll module \$209.95

Reader service no. 759

A road map for the



Isn't it refreshing to talk to someone who actually listens? At IBM PC Direct™, we'll help you put together the ThinkPad® notebook that's exactly right for you. We call it CustomerFit: giving you the perfect combination of hardware,

software, peripherals and accessories. And you can pay the way you prefer. Choose from most major credit cards, 36-month business leasing plans, or purchase orders for qualified customers. Of course, everything you buy is always covered by our 30-day moneyback guarantee.¹



The ThinkPad 755 series has been **hailed by nearly everyone**, including **PC World** and **PC Magazine**.*

The newest 755 notebooks (like the 755CE) come with an Mwave™ Digital Signal Processor (DSP™) with **fax, data, telephony and high-quality audio capability**. Plug into the telephone jack and your ThinkPad becomes a speakerphone or even an answering machine with fax-back-on-demand capability.

A choice of models featuring either the **Intel® DX4/75MHz or DX4/100MHz processor**. Integrated math coprocessor is standard.

Amid the comfortable full-size keys on the new models is nestled the **new TrackPoint III™** with enhanced "Quick Stop" capability. Say goodbye to messy clip-ons and greasy trackballs.

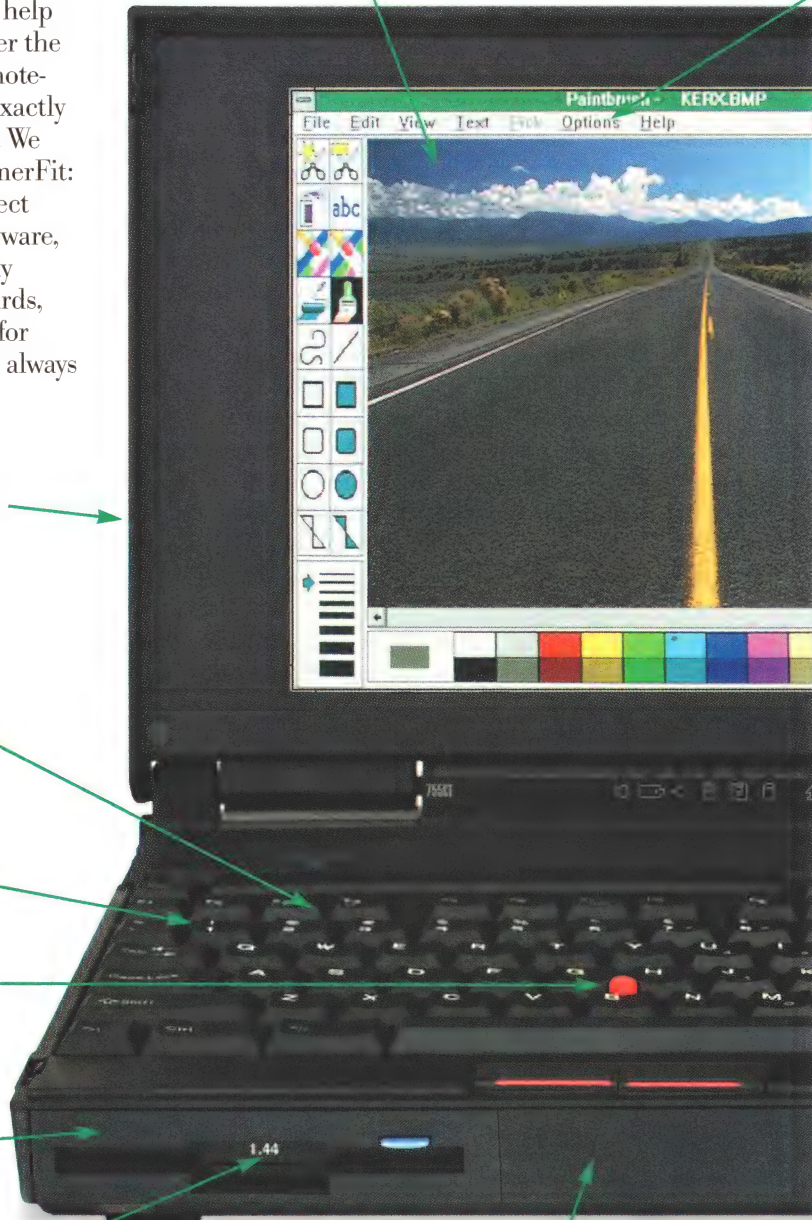
An IBM exclusive. The ThinkPad 755 uses **parity memory**. That means it tells you if there is a data error. If your data is mission critical, this is a must.



Transferring and synchronizing files and data has never been easier. The new ThinkPad 755 models come with **integrated infrared capability**. That makes wireless communications with other notebooks and desktops both quick and reliable.

Snap-out "hot swap" battery lets you change power on the fly. Without shutting down.

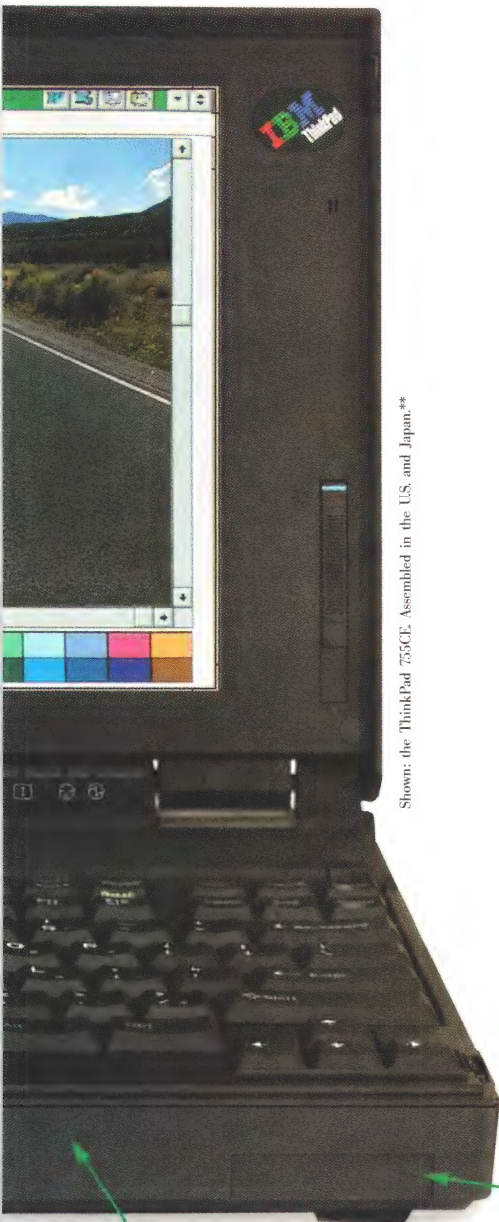
Start with the **acclaimed 10.4" (measured diagonally) color display**. Models available in TFT active matrix, dual scan, or the new glare-resistant black matrix on array TFT color screens.



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Shown: the ThinkPad 755CE. Assembled in the U.S. and Japan.**

You can change hard drives in a snap too. Great for keeping presentations, data, and clients organized on the road.



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<p>Dual scan color. Featuring the integrated Mwave Digital Signal Processor (DSP) with voice, fax and data capability</p> <p>For more performance</p> <ul style="list-style-type: none"> Intel 486DX4/100MHz processor 8MB RAM (expandable to 40MB) 340MB³ HD (upgradable to 810MB) <p>Better communications</p> <ul style="list-style-type: none"> Integrated Mwave DSP subsystem provides: <ul style="list-style-type: none"> 14.4 data/fax modem Mwave telephony includes telephone, full duplex speakerphone, answering machine Full function audio support Microphone/headphone jacks/integrated speaker Infrared communications <p>Convenient to operate</p> <ul style="list-style-type: none"> Weights just 6.4 pounds Battery life: 3.3-10 hrs. New TrackPoint III <p>\$4899 IBM Credit Lease \$174/month²</p>	<p>Black matrix on array TFT color. Featuring the integrated Mwave DSP with voice, fax and data capability</p> <p>For more performance</p> <ul style="list-style-type: none"> Intel 486DX4/100MHz processor 8MB RAM (expandable to 40MB) 340MB³ HD (upgradable to 810MB) <p>Better communications</p> <ul style="list-style-type: none"> Integrated Mwave DSP subsystem provides: <ul style="list-style-type: none"> 14.4 data/fax modem Mwave telephony includes telephone, full duplex speakerphone, answering machine Full function audio support Microphone/headphone jacks/integrated speaker Infrared communications <p>Convenient to operate</p> <ul style="list-style-type: none"> Weights just 6.4 pounds Battery life: 3.3-10 hrs. New TrackPoint III <p>\$6249 IBM Credit Lease \$221/month²</p>	<p>Black matrix on array TFT color. Featuring an internal, snap-out, double-speed CD-ROM, integrated multimedia and the integrated Mwave DSP</p> <p>For more performance</p> <ul style="list-style-type: none"> Intel 486DX4/100MHz processor 8MB RAM (expandable to 40MB) 540MB³ HD (upgradable to 810MB) <p>Better communications</p> <ul style="list-style-type: none"> Integrated DSP Mwave subsystem provides: <ul style="list-style-type: none"> 14.4 data/fax modem Mwave telephony includes telephone, full duplex speakerphone, answering machine Full function audio support Microphone/headphone jacks/stereo speakers Infrared communications <p>Convenient to operate</p> <ul style="list-style-type: none"> Weights just 7.3 pounds Battery life: 3-9 hrs. New TrackPoint III <p>\$7599 IBM Credit Lease \$269/month²</p>
<p>STANDARD ON EVERY THINKPAD 755 NOTEBOOK</p> <ul style="list-style-type: none"> Features a 10.4" (measured diagonally) screen Local bus video with 1MB video memory Math coprocessor 16KB internal cache 3-year warranty with International Warranty Service¹ ThinkPad EasyServ™s and 24-hour HelpCenter® with IBM Online Housecall during warranty Personalized nameplate Hundreds of dollars worth of preloaded business software Advanced power management features PCMCIA support for one Type III or two Type II or Type I devices 3.5" 1.44MB diskette drive Rechargeable NiMH battery and AC adapter 		

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What does it take to start and run a small business? Money, mostly, as well as a few less interesting things, such as hard work, dedication, and perspiration. For a small-business owner to part with \$100 for a CD-ROM, the disc had better be worth it.

SoftKey International's Multimedia MBA—Small Business

Multimedia MBA—Small Business Edition

MULTIMEDIA How-to information, videos, and more for small-business owners.

SoftKey International

800/227-5609,
617/494-1200

Price: \$99.95

Reader service no. 801

Edition, *is* worth the money. With the help of business textbook publisher Richard D. Irwin, Softkey has delivered a CD-ROM full of useful information and tools for a variety of small-business needs. The disc offers a wealth of material for handling day-to-day operations, including templates for business letters, many necessary forms, and spreadsheets.

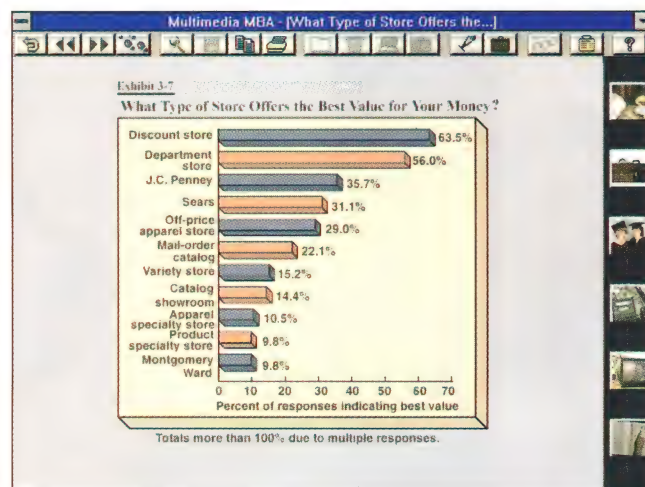
What's more, there's plenty here for developing long-term business strategies, from break-even analysis templates to a video clip in which the founders of Ben & Jerry's ice cream enterprise discuss their business's philanthropic efforts.

The Intel Indeo 3.2-compressed videos display at a comfortable 320-by-240 resolution, and are frequently engaging

and informative. These include short videos of successful television commercials. The disc also contains the audio and text of successful radio ads, graphics of print ad campaigns, charts and

graphs depicting business cycles and trends, and even a dictionary of terms. Best of all, the disc's contents are efficiently organized and easily accessible.

—James A. Martin



MULTIMEDIA MBA contains a wealth of information for entrepreneurs, including business charts, legal forms, and tips from the pros.

Power Spanish Teaches the ABC's of Español

Power Spanish is a language instruction CD-ROM with the novel approach that you probably don't want or need to become fluent in Spanish.

If you're looking for basic communications abilities for business or for a vacation south of the border, Power Spanish offers a relatively quick ground-

ing. It won't, however, provide an extensive vocabulary or a formal understanding of grammar.

Power Spanish, a follow-up to BayWare's well-received Power Japanese, is designed as a series of scenes combining audio and video clips, interactive exercises, and several utilities.

You start by exploring the numerous similarities between English and Spanish, then you move on to exercises designed to bridge the gap between the two. The VoiceStretch feature lets you slow the pronunciation of words or phrases to understand them better. TurboTrans can translate and pronounce every word in the program, and the 10,000-word dictionary is complemented by grammatical reference tables.

Finally, Power Spanish is bundled with MicroTac Software's Spanish Assistant, which translates words, sentences, and documents between English and Spanish. But beware: The directions warn that the translations are less than perfect, a fact that we confirmed during our informal testing.

—Joe Abernathy



¿HABLA ESPAÑOL? Power Spanish combines video and audio clips with interactive exercises to teach basic language skills.

Power Spanish 1.0 for Windows

MULTIMEDIA Teaches the basics of Español.

BayWare, Inc.

800/538-8867,
415/312-0980

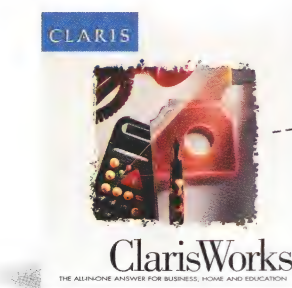
Price: \$149

Reader service no. 802

Humongous



Software for your laptop now comes in two sizes.



*The leanest, meanest, all-in-one
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spreadsheet, database,
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and presentations.*

New ClarisWorks 3.0 for Windows

Most "works" and "office" products hog disk space and pig out on power. Which is why ClarisWorks® software is so popular with so many laptop computer users.

Well under 10MB fully installed†, this full-featured, fat-free program gives you everything you need when you're on the road. And its lean memory requirements and unique design let it keep on going without going through batteries.

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Available in Canada for \$129 by calling 1-800-361-6075.

†Complete installation requirements: 10MB; minimum installation: 2.8MB. ††Special price available in the U.S. only. Offer expires April 30, 1995. Call for Macintosh pricing. Pricing subject to change. Price and money-back guarantee available when purchased direct from Claris only. Tax and shipping costs are additional. Reseller price and terms may vary. ©1994 Claris Corporation. All rights reserved. Claris, ClarisWorks and the ClarisWorks design are registered trademarks and Simply powerful software is a trademark of Claris Corporation. All other trademarks are property of their respective owners.

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Circle 18 on reader service card

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Document Conferencing Packages Get Better but Still Have Glitches

Document conferencing, one of today's hottest applications, lets two people share and annotate PC-based documents across a network or modem connection. The products are still maturing, however, as evidenced by new versions of the popular Face to Face from Crosswise and TalkShow from Future Labs. These prove solid in terms of connectivity options but need work in usability.

TalkShow 3.0 is a good conferencing tool for Windows users. It now runs across LAN-based modem pools—useful for large companies with sophisticated communications servers. Its whiteboard, a window that holds shared documents, accepts many popular image file formats, including BMP, PCX, TIFF, JPEG, GIF, and TGA. You don't have to convert files to a proprietary format before sharing them, as you do with Face to Face.

TalkShow has other advantages as well. Its Chat tool is a pop-up utility that lets you have a real-time, on-screen text con-

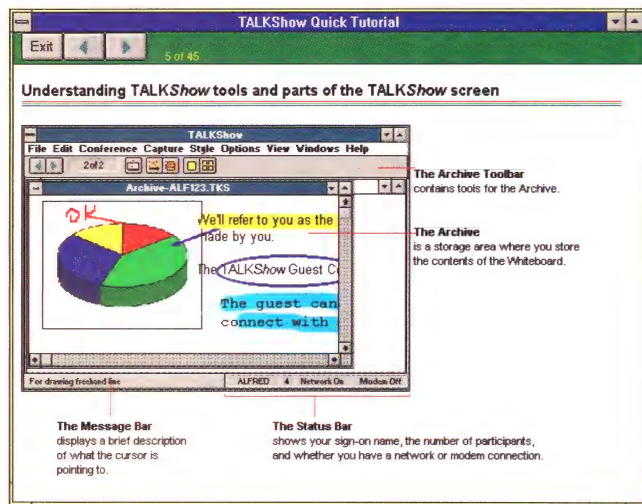
versation with the remote user—an essential tool for expressing your thoughts from, say, a hotel room, where the only phone line is being used by the application. And its interface, featuring brightly colored icons, is more vibrant than Face to Face's drab screen.

We were less impressed with TalkShow's application-viewing feature, a helpful but limited tool. For example, while the host can load and edit a document, the remote user's control is confined to marking up and annotating the document. Other conferencing programs let both users control the application—a superior approach to collaborative computing.

For mixed platforms, Face to Face 2.0 is worth considering. This new version can link Macintoshes and Windows PCs and supports TCP/IP networks for users connecting via the Internet. Like TalkShow, Face to Face includes a handy file transfer utility for sending documents to the remote conferee.

In usability, Face to Face garnered mixed reviews. It was easy to install, except for a modem initialization problem that was quickly solved by Crosswise's technical support team. The document conferencing feature was easy to use but tedious to configure. For instance, you first must convert all documents and image files to Face to Face's own DOI format before sharing them. And because the software lacks TalkShow's Chat feature, it's difficult to discuss the document if your only phone line is being used for the application, although you can type messages in Face to Face's pop-up Note windows.

—Jeff Bertolucci



TALKSHOW 3.0'S HELPFUL TUTORIAL makes it easy to learn the basics of document conferencing by explaining the program's features.

Scan and Print From a Fax Machine

Tight budget forcing you to squeeze the most out of your office equipment? Consider the low-cost Scan-By-Fax, which lets a fax machine function as a scanner and printer.

This \$149.95 peripheral connects between a fax-modem and a fax machine. Measuring just 5 by 5½ by 1½ inches, Scan-By-Fax is small enough for most desktops. It's easy to install, too, thanks to a helpful step-by-step installation guide. Scan-By-Fax works with one or two phone lines and includes a 9-volt AC adapter. You also get a full version of Bit Software's BitFax Professional communications program.

I can't quibble with the installation or operation of Scan-By-Fax, which performed exactly as promised. I was able to scan documents from my fax machine, view them in BitFax Professional, and save them on my PC's hard disk. The printing feature worked well, too. My

Scan-By-Fax

Turns a fax machine into a scanner and printer.

Infinity Computer Products

800/275-7227,

610/539-9494

List price: \$149.95

Reader service no. 730

concern was with the *quality* of the scanning and printing. Since I was stuck with the low-resolution, 200-dpi scanning capabilities of the fax machine, Scan-By-Fax seemed a poor choice for scanning photos, business graphics, or legal documents with small print. Similarly, printed documents lacked the crispness provided even by today's inexpensive ink jet printers.

But if you've got a decent fax machine and a tight budget, Scan-By-Fax is a lot cheaper than buying a printer and a scanner separately.

—Jeff Bertolucci

Face to Face 2.0

PC-to-Mac and PC-to-PC document conferencing.

Crosswise Corp.

800/747-9060,

408/459-9060

List price: \$59

Reader service no. 728

TalkShow 3.0

Document conferencing for Windows users.

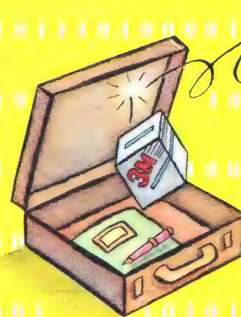
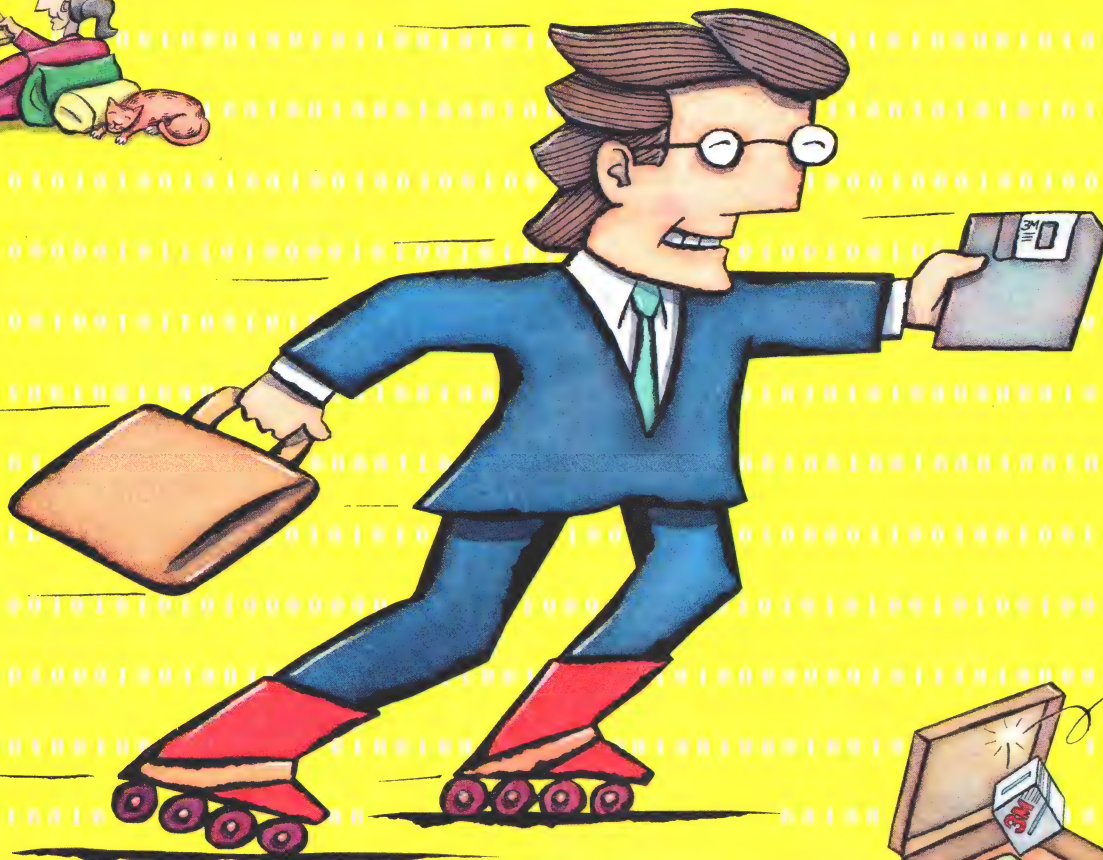
Future Labs, Inc.

415/254-9000

List price: \$249, two-user package \$498

Reader service no. 729

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Does your job lead you to spend most of your workday in hallways, conference rooms, and other people's offices—just about anywhere but at your own desk? If so, you're one of a new breed of workers called "corridor cruisers" and an excellent candidate for Zenith Data Systems' unique new

CruisePad

A unique, wireless terminal for roaming office workers.

Zenith Data Systems

800/533-0331,

708/808-5000

List price: \$1399, CruiseLAN/ISA card \$595

Reader service no. 731

CruisePad wireless terminal.

With its 10.6-by-9.8-by-1.8-inch dimensions and 8.5-inch monochrome display, the 3.2-pound, battery-powered CruisePad looks like a pen-based tablet computer. But rather than being a full-fledged portable PC, it's a wireless, easy-to-tote terminal for your desktop computer. Since you're using the software and data on your primary system, there's no need to learn new applications or transfer files—and if your PC has goodies like a fast processor, CD-ROM drive, or access to a network, CruisePad can take advantage of them, too.

Although it's a pen-based device, it doesn't offer handwriting recognition; you use the stylus

(or your finger) to type with on-screen keys. But if you plan to enter lots of text, plug in any PS/2 keyboard or a \$79 compact model from ZDS. (Of course, this limits your use of the unit while standing or walking.)

The CruisePad has an operating range of about 500 feet when used with a PC equipped with ZDS's \$595 CruiseLAN wireless ISA LAN card (or a notebook with the \$695 PCMCIA version).

Networked organizations can use one or more \$1895 Cruise-



CALLING ALL CORRIDOR CRUISERS: CruisePad lets you wirelessly access desktop data.

LAN/Access Point devices to create wider links that let multiple users carry CruisePads throughout larger workplaces or even between several buildings.

—Harry McCracken

Finally, Multifunction Products With Real Copier Features

Multifunction products may be great for working in cramped offices, but they're still a compromise because the printing, photocopying, faxing, and scanning features of these single devices often don't match those of

stand-alone products. So it should surprise no one that Xerox's new 3000 series of devices addresses perhaps the biggest compromise: poor-quality copies.

The Xerox products offer the best copying features in this cat-

egory. The Xerox 3000 series, made up of the 3002, 3004, and 3006, produce high-quality 300-dpi ink jet copies on plain paper. This compares favorably to the 203-by-192-dpi copies produced by the Hewlett-Packard OfficeJet (reviewed in the November 1994 issue). Each model lets you collate, as well as reduce and enlarge from 50 percent to 200 percent in 1 percent increments.

All three products combine copying with stand-alone faxing and printing. The 3004 also lets you scan (at 300 dpi) and fax directly from your PC. The 3002 and 3006 can be upgraded with these features for \$299.

The 3004 and 3006 provide 14,400-bps faxing, while the lower-cost 3002, like the HP, tops out at 9600 bps. To ensure the confidentiality of incoming

Xerox 3000 Series

Three multifunction devices that copy, fax, scan, and print.

Xerox

800/832-6979

List price: 3002 \$1550, 3004 \$1850, 3006 \$1795

Reader service no. 732

faxes, the 3006 lets you set up ten personal fax "mailboxes." (The 3004 lets supports up to five mailboxes.)

Some disappointing compromises haven't been addressed, however. The Xerox 3000 series' print engines are rated at a poky three pages per minute, and the products can't copy or scan pages that are bound in a book or a magazine.

—Reid Goldsborough



SQUEEZED FOR SPACE? The Xerox 3000 series combines faxing, copying, printing, and scanning in one space-saving device.

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(QuickPay not available in Canada.) Credit card orders only. Please have your card ready. Offer for first time users only. International shipping extra. Offer expires 3/31/95.

*Also available: Version 2.0 for DOS. Does not include new WIN 3.0 features.

Windows system requirements: 386 or higher IBM compatible PC with 4 MB RAM. Windows 3.1 or higher. 10 MB free space on your hard disk and a VGA or better monitor. Works with any printer supported by Windows. QuickBooks is a registered trademark of Intuit Inc.



As usual, Team Dennis Conner is well in front of the competition. But then, they have a history of firsts. In 1980 it was the Kevlar sails. In 1987, an innovative hull surface. In 1988, a sail that looked like an airplane wing. All of which resulted in America's Cup victories.

Of course 1995 should be no exception. Because D.C. has a new secret weapon. Microsoft® Excel 5.0.

With the leading spreadsheet for Windows,™ Conner's design team has the flexibility—and power—to calculate

the results of thousands of test factors to determine an ideal boat design. Make the wrong choice and his team spends the rest of the race looking up somebody's boom. (Sound like your business?) Make the right choice and they're ten seconds faster than the next guys.

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LOSE
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useful information, and help you see what the other guys miss.
The shortcuts.

To put a little distance between yourself and the competition, call (800) 240-4782 Dept. XQV, and we'll send you information on Microsoft Excel 5.0 and the other programs that make up our winning team of Office applications.* After all, the race you're running probably isn't much different than Dennis Conner's. Because in the end, the only thing that matters is being at the last buoy first.



Microsoft

WHERE DO YOU WANT TO GO TODAY?™

WinProbe 3.0

System crashes, RAM shortages, slow performance—every Windows user faces these nagging problems. Landmark Research's WinProbe 3.0 is a diagnostic program that helps keep Windows running smoothly. Its System Status feature presents a graphical overview of your PC, displaying information on the RAM and system resources available to Windows, details about the hardware configuration, and other vital facts. Click on the Tune-up button, and WinProbe analyzes your PC's hardware and software configuration. It then makes suggestions on how to improve performance and reliability, such as adding a line to Windows' SYSTEM.INI file to reduce the likelihood of system crashes. WinProbe 3.0 tests PCMCIA slots and multimedia components such as CD-ROM drives, sound cards, and speakers. It lists for \$99. Landmark Research International Corp., 800/683-6696, 813/443-1331, 813/443-6603 (fax).

Reader service no. 713

BAT Personal Keyboard

This innovative seven-key keyboard now comes with battery backup to remember programmed settings even when turned off—useful for retaining macros. Designed for disabled users—or anyone who needs a free hand while computing—Infogrip's BAT Personal Keyboard lets you type any letter or command with one hand by pressing key combinations with one to five fingers. (BAT stands for Biomechanical-Automated Technology.) Available in both right- and left-handed models, the BAT keyboard plugs into a standard keyboard port. Info-

grip's bundled ChordEasy software helps you create your own library of macro commands. To type the letter A, for instance, you simultaneously press the white thumb key and the first three finger keys. According to Infogrip, typing speeds with the BAT keyboard can reach 45 words per minute. The new battery-backup version of the BAT keyboard costs \$199 for a single unit and \$349 for two. Infogrip, Inc., 800/397-0921.

Reader service no. 714

SyncMaster 3, 3Ne, 4Ne Monitors

Samsung's new line of economy monitors targets the budget-conscious user who wants a well-made, inexpensive 14- or 15-inch display. The SyncMaster 3, 3Ne, and 4Ne models each offer .28mm dot pitch and 1024 by 768 resolution. The 3 runs in interlaced mode at 1024 by 768; the 3Ne runs in noninterlaced mode at the same resolution. The 3 and 3Ne are existing 14-inch models that Samsung has upgraded with a new power management system that automatically powers down the monitor after a user-specified period. Energy usage ranges from 8 to 100 watts, depending on the power mode. The 3 and 3Ne are list priced at \$339 and \$359, respectively. The 4Ne is a 15-inch monitor that features the same power management system and costs \$370. Samsung Electronics America, Inc., 800/726-7864, 201/691-6200.

Reader service no. 715

Breeze for Windows

This low-cost utility lets you customize Windows to suit your personal work habits. You can add 3-D textures to menus, dialog boxes, and title bars to cre-

ate the look and feel that's right for you. Breeze for Windows includes a library of hundreds of textured border styles and 3-D color schemes for window and dialog box frames. You can create a color motif that expresses your individuality—or one that irritates your co-workers. But Breeze is more than a glorified wallpaper program; it includes a suite of utilities you access using the right mouse button, al-

lowing you to capture screen images, find files, assign hot keys, launch applications, and do other tasks. The program offers a handy tool bar with single-click access to many of its utilities. Breeze requires 3MB to 5MB of disk space and lists for \$54.95. CrossWind Development Corp., 800/792-1105, 714/892-8775.

Reader service no. 716

Maxi Sound

In the computer industry, mergers are always big news. So we thought that the Maxi Sound, a multimedia keyboard with built-in speakers, was worth a byte. Featuring a pair of Altec Lansing stereo speakers, an integrated microphone, and a volume slide control, the Maxi Sound is a good choice for cramped desktops where external devices tend to get lost amid stacks of paper and old coffee mugs. The volume slide control makes it easy to crank up the sound—no more software surfing to find the controls. Because the Maxi Sound in-



ONE-HANDED KEYBOARD: The BAT Personal Keyboard now comes in a battery-backup version that retains macros when it's turned off.

cludes several jacks for additional speakers and headsets, you won't have to reach around to the back of the computer case and awkwardly grope for the right connector. Cord clutter and desk disarray are neatly minimized, too: The Maxi Sound features one external cable that branches into separate connectors for the keyboard port and the sound card. And since the Maxi Sound is reasonably priced at \$89, even the most budget-minded executive would approve this expenditure. Maxi Switch Inc., 602/746-9378.

Reader service no. 717

Interleaf 6.0 for Windows

If your company produces long, complex documents, consider the first Windows version of Interleaf, a sophisticated publishing and document management program. Interleaf 6.0 can help networked users create lengthy documents that are revised and edited frequently, such as catalogs. While some desktop publishing programs can create doc-

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Circle 35 on reader service card

uments several hundred pages long, Interleaf 6.0 can handle documents of a million or more pages. The highly customizable program has a list price of \$995; a version that includes a developer's tool kit costs \$1495. Interleaf Inc., 617/290-0710, 800/456-5323.

Reader service no. 718

Crystal Flying Fonts 3.0

Animated 3-D titles and logos may sound a tad exotic, but they can add professional flair to any multimedia presentation. With the \$295 Crystal Flying Fonts 3.0, Windows users can create 3-D animations—with lighting, textures, and reflections—from any combination of shapes and text, and save them in AVI or FLC formats. A major overhaul of DOS-based version 2.0, Flying Fonts 3.0 adds TrueType support and can save single frames of a rendered animation at any Windows-supported resolution. It comes with hundreds of animation paths, more than 50 background textures, and 16 bevel styles. CrystalGraphics, 800/867-2733, 408/496-6175.

Reader service no. 719

Elastic Reality for Windows

How did Kennedy *really* speak to Forrest Gump? With Elastic Reality. Once available only for high-end Macs and Silicon Graphics workstations, this special effects morphing tool now makes its Windows debut. While many competing packages use a tedious point-to-point method in which you click on points around an image to morph it, Elastic Reality's "shape-to-shape" approach is simpler. Just trace the shape of an image you want to morph (such as a person's mouth), then use the program's drawing tools to outline how the image should change. A preview window lets you view your morphs before you save them. The program includes Transjammer, a video segue tool for Video for Windows, FLC, and QuickTime movies. Elastic Reality, Inc., 608/273-6585.

Reader service no. 720

Uninstall-it

Like MicroHelp's UnInstaller, Landmark Research's new Uninstall-it deletes unwanted Win-

dows applications. But Uninstall-it goes one step further by deleting DOS programs, too. This \$39.95 utility also tracks down data files and sections of Windows system files that pertain to an unwanted app—then asks your permission before deleting them. It deletes duplicate files and compresses and archives seldom-used programs—useful for freeing up hard disk space. All files compressed by Uninstall-it have the ZIP extension and can be viewed and decompressed using Uninstall-it and PKZip. Landmark Research International Corp., 800/683-6696, 813/443-1331, 813/443-6603 (fax).

Reader service no. 721

Collaborative Wireless LAN

Wireless LAN adapter manufacturer Photonics has rolled out a new series of wireless networking products based on the company's infrared technology, which uses infrared light signals to transmit data. Photonics's infrared adapters transfer data faster than competing radio-based wireless adapters, but their transmission range is limited to about 25 feet. The company's latest wireless products include the Collaborative microPCMCIA card (\$595), which fits in a PCMCIA Type II slot. The Collaborative Port (\$495) is an external adapter that connects to a parallel port. For connecting to an ethernet network, there's the Collaborative EtherPoint (\$895), a 33-MHz 386 PC with a preinstalled Collaborative PC adapter. And if you already have this adapter and a 386 PC, Collaborative EtherPoint Kit software (\$129) lets you build your own EtherPoint system. Photonics Corp., 408/955-7930.

Reader service no. 722

SoftBoard

Microfield Graphics' innovative SoftBoard is an electronic whiteboard designed for conference rooms, classrooms, and other meeting sites. When connected via serial cable to a Windows PC or a Mac, SoftBoard displays all information written on its porcelain whiteboard simultaneously on the computer's monitor—but this is not a video system. Instead, you use the vendor's dry-erase markers (equipped with reflective bar-coded sleeves) to write on SoftBoard; a laser system tracks the movement, color, and position of the marker in real time. The result: An identical graphical image appears on the monitor. SoftBoard comes in two designs: The \$2995 model 201 mounts on a wall, and the \$3995 model 203 has an integrated rolling stand. Microfield Graphics, 800/334-4922, 503/626-9393.

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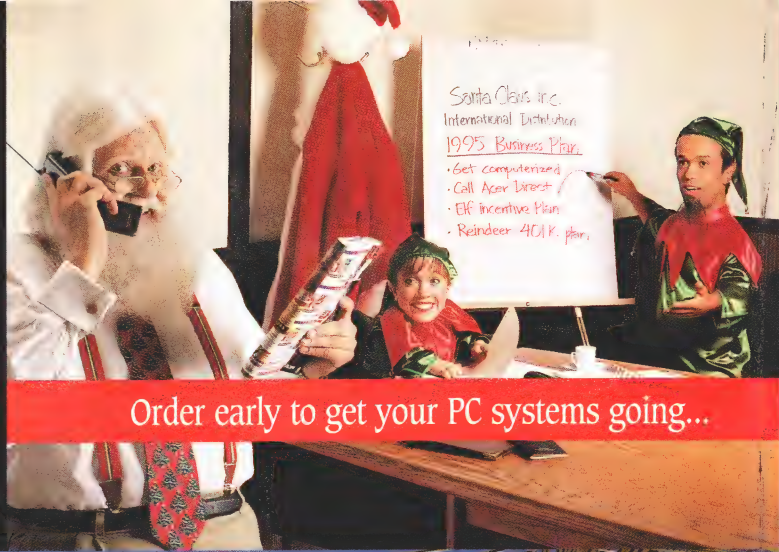
Reader service no. 724

For more information about any product, contact the manufacturer or circle the number on the reader service card.

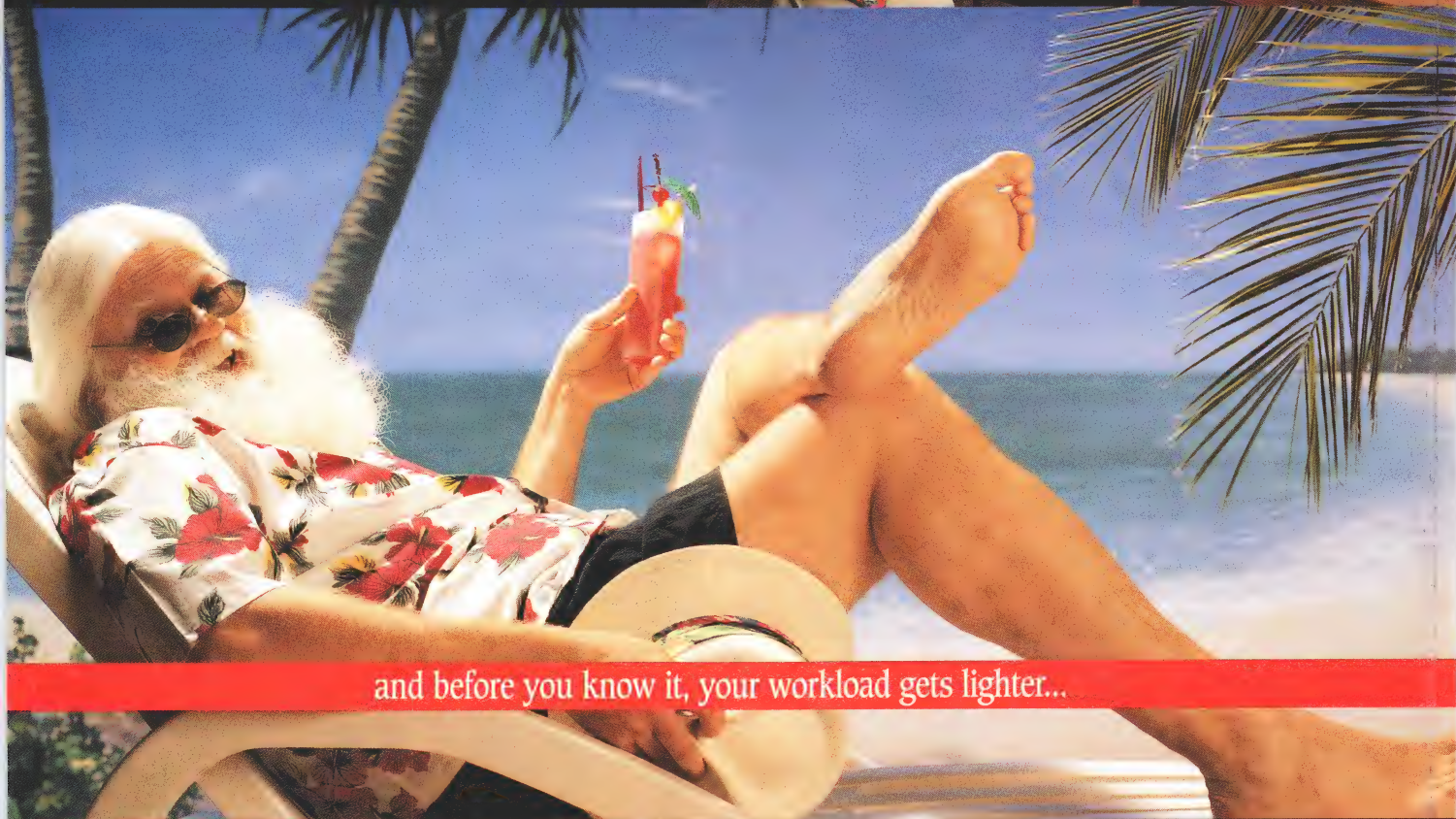


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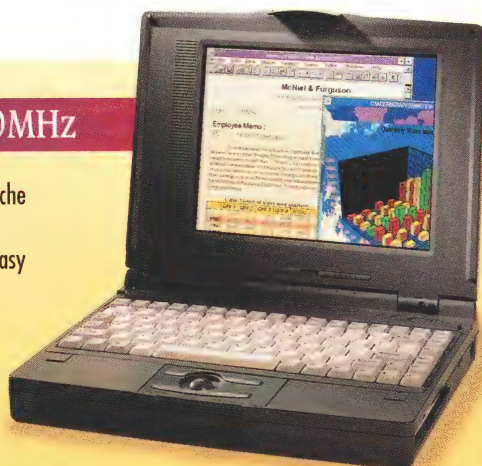
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INSIDE

DOING IT
BY THE BOOK

CD-ROMS: WHAT'S HOT,
WHAT'S NOT

Whether you're creating a presentation, checking out movie previews on the latest CD magazine, or blasting an audio CD of Rolling Stones tunes, multimedia affects how well your PC works—and your PC affects how well multimedia plays.

While multimedia is still young in PC years, it has experienced a recent growth spurt. Unfortunately, that growth hasn't resulted in much industry standardization. Until hardware vendors create sound cards, video adapters, and CD-ROMs that speak the same language, software performance will continue to vary from product to product, and user questions will abound.

But if you know the rudiments of how current multimedia components work by themselves *and* with each other, troubleshooting becomes much easier. Accordingly, *PC World* asked Andy Rathbone, author of *Multimedia & CD-ROMs for Dummies* (IDG Books, 1994), to answer some frequently expressed concerns and questions. Along the way we give some surefire tips and recommend products to help you optimize multimedia performance on your PC.

Advice from
a best-selling
author on
troubleshooting
problems
with CD-ROM
drives, sound,
and video.

Beating the

Multimedia Blues

By

Andy Rathbone

SOUND CARDS

Game players have enjoyed sound cards in their PCs since 1987, but multimedia has finally gained the noisemakers a little respect and a large enough market to guarantee added power at lower prices. Since sound cards use comparatively old technology, the biggest problem most sound card users face is installing them. Once installed, the cards generally run without problems. Nonetheless, there are still questions about what sound cards do and how to optimize them.

Can I hear sound in Windows without buying a sound card?

Yes. Microsoft intended to include a PC speaker driver with Windows 3.1, to enable users to hear sounds through their computer's built-in speaker—even without a sound card. But the driver didn't work well on many computers, so Microsoft left it out of the final Windows 3.1 release.

But if you want to try this feature, you'll find the speaker driver, named SPEAK.EXE, on Microsoft's BBS (206/637-9009). CompuServe members can find the file in the Microsoft Software Library (GO MSL).

Beware the driver's problems, though. First, it can't play MIDI files—it can only play back previously recorded sounds. It won't play back sound tracks from Microsoft Video for Windows AVI files, either. But at least the price is right.

When should I use my sound card's headphone jack instead of the one on the front of my CD-ROM drive?

Sound cards and most CD-ROM drives have their own headphone jack, but the two types of jacks are intended for very different uses. Plug speakers into a

sound card's headphone jack, and you'll hear all kinds of sounds route through your card: digital effects, synthesized music, and—if your CD-ROM drive is hooked up correctly—even audio CDs.

Your CD-ROM drive's headphone/speaker jacks, by contrast, can access only audio tracks. In addition, CD-ROM drives don't amplify sounds, so their jacks can power only headphones. Speakers will work only if they have their own power source.

The CD-ROM drive's front-mounted knob works only with audio tracks—whether they are on an audio-only CD or on a CD-ROM that combines audio and data tracks. On the latter, the data is always segregated on the first track. Never try to listen to that data track. It might contain some digital signals (noise) that can blow your speakers' woofers if the volume is set above a whisper.

Why doesn't my CD-ROM drive play my Mantovani CDs through the sound card?

It doesn't have the right cable. A CD-ROM drive sends music to your sound card through a special audio cable, not through the main connector cable. The audio cable is thin, usually consisting of three or four tiny wires. One end of this cable plugs into a small jack or a set of pins on the sound card. The other end of the cable plugs into a jack or set of pins on the CD-ROM drive.

When sold as a package, a CD-ROM drive and sound card usually come with the required audio cable. But if you bought your drive and sound card separately, you'll have to buy the audio cable yourself (try TTS Cables at 800/887-4968, or CD ROM Warehouse at 800/237-6623). Make sure you specify the brand of sound card and CD-ROM drive you're using, because the audio cable you need can vary.

You might want to connect the audio cable even if you don't plan on listening to CDs. A few multimedia games play background music through the CD-ROM drive's audio channel, but without the audio cable, you'll hear these sounds only through the drive's headphone jack. (More on this in the CD-ROM section.)

I can't hear anything!

First, check the speakers. Are they plugged into the proper port on your sound card? Some speakers need to be turned on; others may need fresh batteries.

Next, check the volume. Some sound cards come with volume knobs near their input/output jacks; make sure the knob is turned up. Sometimes you can control the volume with software—many sound cards



THE DOCTOR IS IN

FIRST AID FOR WINDOWS, a worthwhile hardware detective program from CyberMedia, can help identify potential problems and conflicts inside your computer, as well as devise solutions to problems as they occur. At \$49, it's a good and inexpensive way to keep your multimedia components from unnecessary bickering. It will even uncover IRQ and DMA conflicts and then fix them at your command.

Reader service no. 738

Multimedia PC Operating Requirements: MYTH VERSUS REALITY



MPC2 minimum standards no longer cut it for multimedia playback. Our recommendations are what MPC2 standards should be today.

PC COMPONENT	MPC2 (MINIMUM)	RECOMMENDED
CPU	25-MHz 486SX	50-MHz 486DX
RAM	4MB	8MB
Hard disk	160MB	340MB
CD-ROM drive	double-speed	triple-speed
Video card	640 x 480	1024 x 768
Number of colors	65,536	65,536
Sound card	8-bit with 8-note synthesizer	8-bit with 8-note synthesizer
Floppy disk	3.5-inch, high-density	3.5-inch, high-density

come with Windows programs for this purpose. Some multimedia programs incorporate volume control for user customization. Remember that this software control works only when the sound card's volume control knob is turned up.

The two main types of sound files used, particularly in Windows, are WAV (Waveform) and MIDI (MID). Each format packs sound into files using a different technology. Most MIDI files play back at a different volume from WAV files and usually require a software volume adjustment. Check to see if your sound card includes a Windows audio-control program. The volume controls are often divided into separate WAV, MIDI, Record Input, and master control buttons.

Creative Labs pioneered sound cards with its family of Sound Blaster cards. Accordingly, Sound Blaster is the de facto compatibility standard. While many programs will scan for other brands of sound cards, many others still demand Sound Blaster compatibility. Most sound card vendors support Sound Blaster compatibility, but each card must be installed to send and receive Sound Blaster data. To find out whether your sound card is set to process Sound Blaster data, check the AUTOEXEC.BAT file in the root directory of your hard disk. If you see a line that starts with SET BLASTER, your sound card's installation program has done its job.

You still might have to tweak the settings on that line, because Sound Blaster compatibility requires special IRQ (interrupt request) and DMA (direct memory access) settings. Read your sound card's documentation about Sound Blaster compatibility and settings to determine the correct ones.

Finally, check for hardware conflicts. If you've just installed a card, make sure you don't have any IRQ or DMA channel conflicts with other cards. For example, sound and network cards often try to claim the same IRQ. If a sound card's install program has automatically staked out, say, IRQ 7, but the network card already owns that setting, you'll need to find another available IRQ for both cards to work.

Solving conflicts involves trial and error: Change the card's IRQ or DMA settings, and see if it works when you reboot. Then keep a list of the hardware settings your peripherals use; it will prove invaluable if you need to do some reconfiguring.

It sounds awful!

High-quality sound consumes gobs of disk space, so some software companies skimp on sound quality to minimize file size. For example, not all multimedia programs use stereo digital sound, since it eats up twice the disk space that mono sound does.















Also, most multimedia computers come with low-quality speakers; you'll find much better speakers at a

File Formats:

WHAT'S IN A NAME?



Each time a vendor thinks up a new way to store information in a file, somebody thinks up a new abbreviation to stick at the end of the file's name. The result? A list of file extensions that grows bigger every day. This table should bring you up-to-date on the latest file extensions being tacked on to multimedia files.

	FILE EXTENSION	DESCRIPTION
	AVI (Audio Video Interleaved)	Video with a sound track. Accessible through Windows' Media Player.
	BMP (Bitmap)	Graphics. Accessible through Windows' Paintbrush.
	CGM (Computer Graphics Metafile)	16-color graphics. An international standard for moving simple graphics between families of computers, such as PCs and Macs, CGM is accessible through Corel Draw and most major graphics packages.
	FLC, FLI (Flick)	Animation. A format started by Autodesk that can be played back from a wide variety of graphics software.
	JPG (JPEG: Joint Photographic Experts Group)	Photos. High-quality photographs stored using a special compression format.
	MFF (MIDI file format)	Music. A MIDI format compatible with most MIDI programs and sequencers.
	MID (MIDI)	Music. A slightly abbreviated MIDI format designed for Microsoft Windows; accessible through Media Player.
	MOV (QuickTime)	Video. A video format that originated on Apple's Macintosh computers; now in Windows, too.
	MPG (MPEG: Motion Pictures Experts Group)	Video. A highly compressed format requiring special hardware and software for DOS playback and recording.
	PCD (Photo CD)	Photos. Photographs stored on Kodak's Photo CDs; accessible by Kodak's own software.
	PCX	Graphics. A popular format accessible by most graphics programs, including Paintbrush.
	TIF (TIFF: Tagged Image File Format)	Graphics. A format popularized by Aldus PageMaker for moving graphics between different types of software and computers; often used by scanners.
	VOC (Creative Voice)	Sound. Sound Blaster cards record sounds in this format.
	WAV (Waveform)	Sound. Windows' preferred format for storing recorded sounds.

home stereo shop. Better yet, route your sound card's output to your home stereo's auxiliary input jack, and listen to the tracks as you would a record.

If all your programs still sound awful, you might have a hardware conflict. Check the IRQ and DMA settings, as described previously. Finally, remember that MIDI files often play back at a different volume from WAV files; try adjusting the volume.

CD-ROM DRIVES

If the sound card provides the ears of multimedia, then the CD-ROM drive is its heart. As the drive spins, the computer grabs information stored on CD-ROMs and audio CDs, whether they are stuffed with

sound, video, text, graphics—or a mixture of them all. The drive's speed determines just how well most multimedia applications play back CD-ROM data, particularly video.

While many of the original single-speed CD-ROM drives are still in use, almost all multimedia is now optimized for play on double-speed drives. In the next year, however, the newer quadruple-speed drives will become commonplace. No matter what type of drive you use, there are ways to tweak its performance. Read on.

How can I speed up my CD-ROM drive?

For accessing information, hard drives are much quicker than CD-ROM drives. But don't worry: You

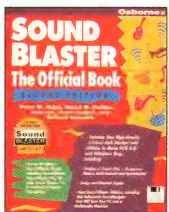
Doing It by the Book: MULTIMEDIA TIPS AND TECHNIQUES

Book publishers have produced so many multimedia guidebooks that figuring out which ones offer the best help is a chore in itself. Here are some books that transform much of multimedia's technobabble into informative, conversational text. And while we don't review author Andy Rathbone's *Multimedia & CD-ROMs for Dummies* here, it is noteworthy for the amount of information it covers without actually treating the reader as a dummy. The \$29.95 volume from IDG Books comes with a CD-ROM featuring a guided tour of multimedia. Reader service no. 739

—Michael S. Lasky

Sound Blaster: The Official Book, Second Edition, Peter M. Ridge, David M. Golden, Ivan Luk, and Scott E. Sindorf (Osborne/McGraw-Hill, 1994, \$34.95, 800/227-0900). Reader service no. 740

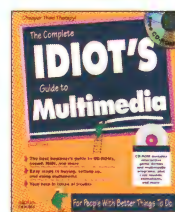
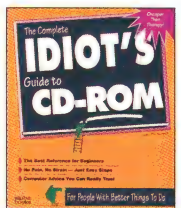
Who says multimedia isn't easy? Most of us can easily get our system to freeze instantly, just by fiddling with a single sound card setting. Likewise, the idiosyncratic demands imposed by practically each new multimedia package make crashing your system an inevitability. That's why this book has become my bible on sound. Covering most of Creative Labs' Sound Blaster family of cards—the compatibility benchmark other sound card vendors now standardize on—the book includes instructions, advice, tips, and the types of troubleshooting details not easily dispensed even by customer support. One particularly helpful feature of the book is its series of hardware and software configuration diagrams, which clearly illustrate how a sound card works—or how to get it to work when it becomes silent. Solid overviews of Sound Blaster and third-party sound software (some of which is bundled on an enclosed floppy) read the way product documentation should. There's also a guide to online services that offer a slew of downloadable sound files or sound advice, CD-ROM audio output information, and troubleshooting advice for both DOS and Windows sound problems.



The Complete Idiot's Guide to CD-ROM, John Pivovarnick (Alpha Books, 1994, \$14.95, 800/428-5331). Reader service no. 741

The cover blurb reads, "Cheaper Than Therapy." While that's meant in jest, anybody who has had CD-ROM problems will tell you that it's not far wrong. The joke also sets the tone of this refreshingly simple book of tips; it should speak to everyone who owns a CD-ROM drive. Each chapter provides step-by-step information and is sea-

soned with highlighted text boxes containing warnings (Oops!), tips (By The Way), nitty-gritty technical details (Techno Nerd Teaches), quickie how-tos (E-Z), technical jargon translated (Speak Like a Geek), and the basic lowdown (The Least You Need to Know). Troubleshooting, speed tips, advice for buying a CD-ROM drive, and other information is playfully presented to be entertaining as well as enlightening. In fact, with so much valuable info, I think the title's humorous reference to idiots is a misnomer. This is a book for *any* CD-ROM drive owner.



The Complete Idiot's Guide to Multimedia, David Haskin (Alpha Books, 1994, \$19.95, 800/428-5331). Reader service no. 742

Following the same formula as *The Complete Idiot's Guide to CD-ROM*, this book quickly brings you up to speed with multimedia hardware and software. The language is hip and occasionally a bit arch, and it makes wading through the maze of technical terms much more entertaining. Although this book is ostensibly a beginner's guide, many of its tips

can speed up your CD-ROM drive the same way you've been accelerating your hard drive for years—by using a cache.

Cache programs store information that's previously been read, whether off your CD-ROM drive or a hard disk. The first time you access data on a CD, the drive will be as slow as ever. In subsequent calls, however, much of that same data will be read from the cache stored in memory.

Several CD-ROM caching programs are on the market, and with the release of DOS 6.2, DOS SmartDrive can finally cache CD-ROM drives, significantly speeding up the action. But SmartDrive won't cache your CD-ROM drive unless it knows your computer has one. Make sure the line in your AUTOEXEC-

.BAT file containing the Microsoft CD-ROM driver, MSCDEX.EXE, appears *before* the line containing SMARTDRV.

How many CD-ROM caddies do I need?

CD-ROM drives come in two basic models. Some drives come with an automatic sliding drawer: Drop a bare CD-ROM onto the ejected tray, and the drive pulls the drawer back inside and begins reading the disc. Other CD-ROM drives use a less convenient *caddy* system: You place discs inside special CD holders, or caddies, which you then insert into the CD-ROM drive.

If your drive uses caddies, buy a separate caddy for each disc you use often. That gives you the best of both worlds—your discs will be protected from dust and other damage, yet you won't have to fiddle with finding a caddy when you change CDs. While caddies add an extra expense for multimedia upkeep, they are now available for as little as \$4 each.

When should I use my CD-ROM drive's headphone jack instead of the one on the back of my sound card?

As noted earlier, if your CD-ROM drive is compatible with your sound card and you've connected them with an audio cable, audio tracks can play through the speakers connected to the sound card, making it unnecessary to use the CD-ROM drive's headphone jack. Without this connection, all audio-only tracks can be heard only through the CD-ROM drive's headphone jack.

VIDEO

Just as speed is essential for CD-ROM drive performance, video display demands it as well. If you don't have an accelerated video card packed with its own memory trove, there are other ways you can speed up your computer's video processing.

Probably the simplest way is to defragment, or optimize, your hard drive; videos play back much smoother when the hard drive has been freshly defragged. Updating your graphics card's drivers is another way to speed up screen refreshes.



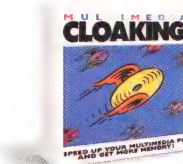
SOUNDS SENSATIONAL

NUREALITY'S

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sound enhancement system perks up even mono reproduction with 3-D sound that seems to encircle the listener. The paperback-size device connects easily between your sound card and speakers and uses only two speakers to accomplish its sleight-of-ear magic. It comes with user controls for setting volume and for centering and spacing sound. The center control lets you highlight the most prominent part of a recording, such as a voice. The space control changes the depth of an audio sequence, letting you better hear the movement and separation of sounds.

Reader service no. 745



MEMORY MAGICIAN

HELIX SOFTWARE'S

MULTIMEDIA CLOAKING

is another speed-up solution. The \$39 utility places all the start-up multimedia drivers—there's a slew of them taking up your RAM real estate—and places them into high memory.

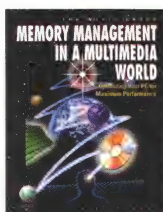
This frees up the more efficient lower memory to run many CD-ROMs faster.

Reader service no. 746

will help even the savviest multimedia specialist. On the other hand, to remain accessible to novices, the package glosses over many technical topics. Again, as with the other "idiot" guide, this book's best feature is its energetic editorial design, which peppers the text with highlighted boxes that give you essential information at a glance.

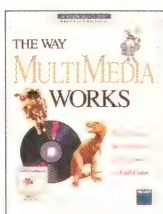
Memory Management in a Multimedia World, Joel Powell (Waite Group Press, 1994, \$18.95, 800/368-9369). Reader service no. 743

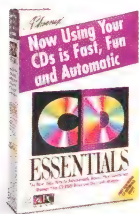
Anyone who has ever suffered through a series of 'Insufficient Memory' messages while attempting to run RAM-hungry software should find this book invaluable. Even if you know the difference between expanded memory and extended memory, this guide takes you by the hand and shows you how to fully unleash unused memory. It's no secret that multimedia's liberal use of video and sound will gobble as much memory as your computer holds. The straightforward text and slew of knowledge-enhancing illustrations tell you how to tame that valuable resource, what to do when memory management doesn't cooperate, and how to take advantage of the memory utilities that come with DOS and Windows or from third-party vendors.



The Way MultiMedia Works, Simon Collin (Microsoft Press, 1994, \$19.95, 800/677-7377). Reader service no. 744

Overflowing with illustrations, this book comes about as close to a multimedia presentation as the printed medium allows. With plenty of tips, shortcuts, and advice on troubleshooting multimedia PC hardware and software problems, this large-format volume lives up to the name of the series to which it belongs: The WYSIWYG Guides. In addition, the full-color, easy-to-understand layout of the book provides an energetic approach that perfectly suits the subject matter.



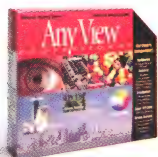


QUICK-CHANGE ARTIST

PHOENIX TECHNOLOGIES' CD ESSENTIALS

is a utility that installs and launches CD-ROM applications. The program senses when you insert a disc. If the application on the CD is new, CD Essentials automatically installs it and then prompts the user on what to do next. Each time you use that CD again, CD Essentials recognizes the application and launches it. The \$49.95 package includes integrated multimedia player and audio CD player software for quick start-up of any multimedia component.

Reader service no. 747



SWITCH HITTER

BINAR GRAPHICS' \$49 ANYVIEW PROFESSIONAL is a software-only graphics utility that lets users switch between screen resolutions on the fly. It promises to boost Windows graphics speed by as much as 25 percent. A built-in memory management feature eliminates the 'Insufficient Memory' or 'Out of Resources' errors caused when Windows needs to process video for multiple programs. The utility also lets you magnify a designated portion of the screen.

Reader service no. 748

Why does the video look so jerky?

Unfortunately, Windows doesn't always play back movies smoothly, so here are some tips for getting better results. First, use a disc-caching program. As described earlier, the SmartDrive program bundled with DOS 6.2 can cache CD-ROMs; third-party programs are available as well.

Make the window smaller. The more pixels Windows has to throw around, the slower it performs.

If the video plays poorly from within the program it came with, try replaying it (or another video) by itself in Windows' Media Player utility. After opening Media Player, select *Video for Windows* from the Device menu. Select any AVI file in the browser window. In the Configure area of Media Player's Device menu, make sure that the *Zoom by 2* option is unchecked and that the *Skip video frames if behind* option is checked.

Play the video and see if performance improves. If it does, then the multimedia program is the culprit. If not, then your system needs a performance tweak.

What are full-motion and full-screen video?

Anybody who's examined a strip of video film knows that video is simply a bunch of individual pictures flashed onto the screen in quick succession. When you flash 30 pictures—called *frames*—onto the screen every second, you trick the eye into seeing motion.

Full-motion video means the pictures move by at 30 frames per second—fast enough to eliminate any jerky effect. Most computerized video moves at only 15 frames per second, however; while it's not quite fast enough to fool the eye, the computer needs to work only half as hard.

Full-screen video simply means that the movie fills your entire screen rather than running windowed. But it fills the screen only in VGA mode (640 by 480 pixels). In super-VGA mode (800 by 600 or 1024 by 768), your "full-motion video" movie will fill a smaller proportional box on the screen—not the entire screen.

What's the difference between QuickTime, AVI, and MPEG?

The way they compress enormous video files. What these video compression standards share is the goal of compressing images so they take up less space, then decompressing and displaying the images quickly enough to preserve the illusion of motion.

QuickTime is Apple's video standard, or format; Microsoft Windows, by contrast, uses Microsoft Video for Windows' AVI—Audio Video Interleaved—files. Today, cross-platform drivers let you play back either format or convert files from one format to another.

The QuickTime and AVI standards each work with a variety of data compression formats, known as *codecs* (Compression-DECompression). For example, Intel's codec, dubbed Indeo, allows both AVI and QuickTime to compress and decompress images when playing back or recording video. CinePak is a codec that started on the Macintosh platform but now works with AVI, too. While it is slow at compressing, the results look great.

Another codec, MPEG (created by the Moving Pictures Experts Group), provides some of the best-

Videos play back smoother when the hard disk is freshly optimized.

quality IBM-compatible video, but it requires hardware (usually built into a special MPEG card) before you can play it back under DOS or Windows. Intel's new Pentium chips will include the capabilities to handle full-screen video, ostensibly making an MPEG card unnecessary for Pentium users.

How do I add Video for Windows or QuickTime and still keep the latest version on my system?

Almost all Windows multimedia programs that include video come with a run-time version of Video for Windows or QuickTime. When you install the program, it updates Windows' Media Player to play back Video for Windows' AVI files. If you simply want to play AVI programs you've downloaded from a bulletin board, look for the Video for Windows run-time package there. It's also free from most online services.

Unfortunately, some multimedia programs don't check to see if your computer already has Video for Windows. The worst offenders copy an older version over the more current one on your hard drive (almost always to your WINDOWS\SYSTEM directory). How rude! And how frustrating for the user.

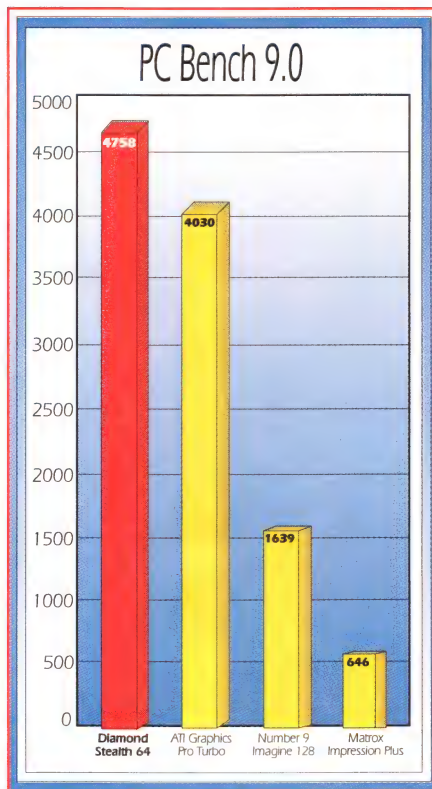
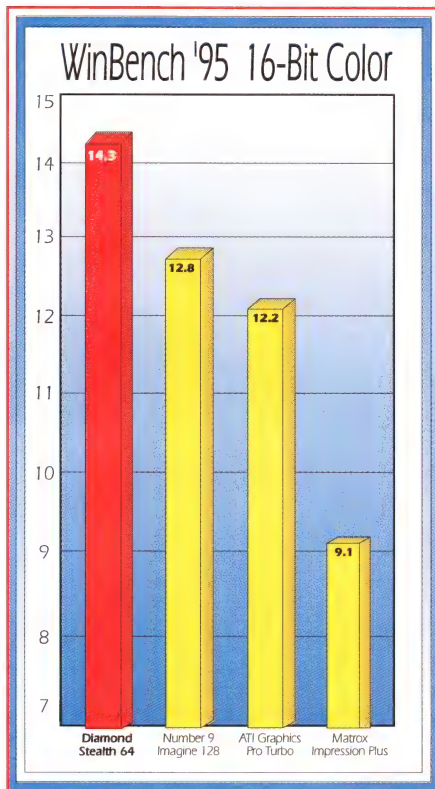
The solution? Make sure you keep a current version of Video for Windows on hand so you can reinstall it over an older version. The same advice applies to QuickTime; while some of its files are in the WINDOWS\SYSTEM directory, others are placed in their own directory; so you need to check both directories for currency, especially if you're experiencing poor video performance after installing a new program.

Andy Rathbone is the author of several books, including Windows 3.1 for Dummies (IDG Books, 1994). Michael S. Lasky is an associate editor for PC World.

For more information about all products in this article, circle reader service no. 909.

NO CONTEST.

"The Diamond Stealth 64 VRAM is the leader in performance and usability. It blazed through our tests, recording the best times... Its InControl Tools lets you master your environment in every respect; icons make it simple to control power management, establish multiple views, and zoom in on targeted information." —John Gartner, Technical Editor, Serdar Yegulalp, Assistant Technical Editor, James Miller, Laboratory Assistant, "Windows Magazine Recommended", *Windows Magazine*, December 1994



Windows 3.1 PCI performance tests performed by Diamond Multimedia Systems, Inc. on publicly available hardware and software running Ziff-Davis' WinBench® 95 Version 1.0 on an HP Vectra XU 5/90 Pentium 90MHz system with 256k cache, 40MB RAM, 540MB SCSI hard disk, SmartDrive 2048 128, and DOS 6.2. All Cards were tested at 1024x768x65k 72Hz Large Font. The Stealth 64 VRAM was configured with 2MB of VRAM using driver release 1.20. The ATI Graphics Pro Turbo was configured with 2MB VRAM using driver release v1.03. The #9 Imagine 128 card was configured with 4MB VRAM using driver release v1.29. The Matrox Impression Plus was configured with 2MB VRAM using driver release 1.42.

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December, 1994



November, 1994



September, 1994

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CD-ROMs

What's Hot, What's Not



AS THE MULTIMEDIA INDUSTRY RAPIDLY matures and improves technology, the number of recommendable CD-ROMs continues to rise. So it was no surprise to us to find that all the silver platters in this month's roundup are winners. But while CD-ROM content keeps improving, it's still wise to keep an eye on the hardware requirements that multimedia packages demand. Most vendors now list both minimum and optimum requirements ("Multimedia PC Operating Requirements"). More often than not, the minimum gets you exactly that: minimum performance. Of these CD-ROMs, this advice is most applicable to *The Cartoon History of the Universe* and *Under a Killing Moon*.



The Cartoon History of the Universe

History doesn't have to be boring. Or serious. Fans of cartoonist Larry Gonick and his ongoing series, *The Cartoon History of the Universe*, have known that for years. Now Putnam New Media has brought together the first seven volumes—from the Big Bang to Alexander the Great—in a two-CD set, adding limited animation and some very funny voices. Gonick's scholarly yet absurd view of the past is the main attraction here. Migrating

all of its files in its own directory and leaving your WINDOWS or SYSTEM directories untouched, unlike most multimedia apps today. Putnam New Media, \$39.95 (street), 800/631-8571. —*Lincoln Spector*

Reader service no. 611

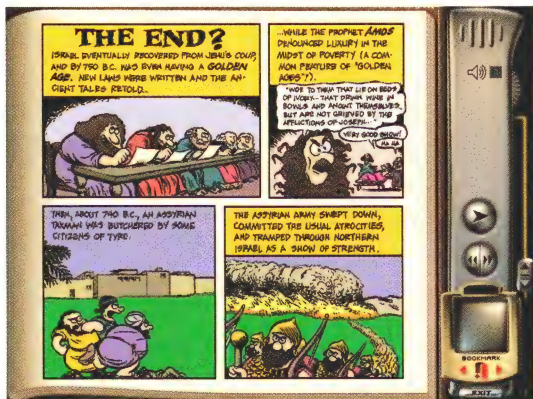


Under a Killing Moon

Recipe for an ambitious CD-ROM project: Get name actors (not too big, but ones that know their craft) to star in an interactive movie in which the player controls one of the parts. Combine a sci-fi story with elements from classic B-movie detective yarns. Emphasize video quality so that it runs smoothly on a PC. Make sure the story is intriguing and the acting engaging enough to maintain viewer/player interest. Bake for two years. The result is Access Software's *Under a Killing Moon*, a four- (that's right—four) disc package that lives up to its advanced hype. Starring Brian Keith, Margot

Kidder, Russell Means, and "the voice of" James Earl Jones, it's more a movie with gaming elements than the other way around. Using a script with a hip sensibility and a dry, sarcastic wit, the story centers on solving a mystery that could very well save the planet. You play Tex Murphy, a San Francisco private eye caught in a time warp. The year is techno-smart 2042, but Tex seems stuck in 1945. You control what he says and does. Whether you're in conversation or viewing a movie sequence, the game follows from Tex's point of view. The creators have obviously tried to learn from the pitfalls of previous multimedia attempts at games with video, in which a player who makes a correct choice is rewarded with a video sequence. Now the video is integrated so that you can view the whole movie with few pauses if you're more interested in the story than the gaming aspects. The characters are appealing, and—for a game, at least—so are the actors' performances. The game does offer significant challenge, but for players with little patience for trying out every possibility, there are an unprecedented number of online hints to keep you in play. Access Software's merging of cinema with computer gaming won't win any Oscars, but it does get two thumbs up for solid entertainment. Access Software, \$60 (street), 800/800-4880 —*Michael S. Lasky*

Reader service no. 612



The Cartoon History is more than a silver-platter comic book. It's a humorous collection of games and factoids that tickles as it teaches.

brontosaurs complain as they step on each other's tails. Arrogant Cro-Magnon teenagers poke fun at their Neanderthal parents. King Oedipus asks his wife, "Don't I know you from somewhere?" Somehow or another, it's all funnier when you hear the characters talking. The *Cartoon History of the Universe* runs a bit on the slow side, and navigating between different parts isn't as easy as it might be. Also, the installation takes a whopping 11.2MB of hard disk space. But at least it's polite about it, putting



It's a movie! It's a game! Under a Killing Moon is an interactive extravaganza that lets you play the game or just watch the movie.





Microsoft Complete: NBA Basketball

Contents

ALMANAC

CHRONICLE

PLAYERS

TEAMS

SCOUTING

DAILY

THIMA

careers. You can hear sound bites from the game's legends and watch video clips of their trademark moves—like a Magic Johnson no-look pass or Larry Bird burying a “three” from the corner. As with Microsoft Complete Baseball, you can dial up a bulletin board to get the latest stats and news on your favorite teams. The CD sports a trivia quiz, league schedules, arena seating charts, tales of basketball lore, and much more. If you're a roundball fan, this disc will put you in hoops heaven. Microsoft, \$49.95, 800/426-9400. —*Daniel Tynan*



Sharks! An Interactive Journey

TV show video, 200 photos, and lots of articles on topics ranging from birthing rituals to smelling blood miles away. Load up the disc and you're at the submarine control panel: Ask shark experts their opinions; watch videos of sharks in the hunt (or just in the wild); learn about the anatomy, history, and lore of sharks; or just relax with a game of Shark Tag to sharpen your identify-

Reader service no. 616



Media, elfen playmates Kris and Kross guide children—and adults—through seven learning activities that test their analytical skills in areas such as sorting, estimating, and matching. One of my favorites was the card game, where you can pick your own suits—lizards instead of hearts, frogs instead of clubs. The goal is to see who can get rid

of their cards first, by placing them in sequential order by suit. My competition was three little elves, and I lost every time. Also included are a sorting game, anagrams, a game for guessing measurements, tangrams, a guessing game, and more. The games aren't easy (though in some areas you can increase the level of difficulty as your skills improve). But help is always available, just by clicking

on Kris or the question-mark icon. And if you hesitate too long when it's your turn to move, Kris chimes in with brief instructions.

work this disc is loosely based. Putnam New Media, \$34.95 (street), 800/631-8571.

—*Roberta Furger*

Reader service no. 617



When you take pictures, who calls the shots: you or your camera? Understanding Exposure shows you how to take control of your single lens reflex camera so you can shoot great pictures in any natural lighting condition. This virtual photography course on a disc comes with a colorful, 144-page book by *Outdoor Photographer* magazine's contributing editor and award-winning photographer Bryan Peterson. His plain-English lessons and helpful tips make it easy to grasp each technique. The only piece missing is a camera diagram showing you exactly what each gizmo on your camera does. The CD-ROM parcels its wealth of info into four sections: an Interactive Theater, a Workshop, a Photo Lab, and an Image Gallery. The Interactive Theater walks you through the whole photographic process. Once you get the basics down, you can choose from over 70 workshops to refine your techniques. The Photo Lab lets



Photographer Bryan Peterson offers tips on getting the right exposure for your shot.

you change the exposure on a variety of images using a virtual camera. Diamar Interactive, \$79.95, 800/234-2627. —*John Goddard*

Reader service no. 615

For more information about all products in this article, circle reader service no. 902.



1. The logical way.

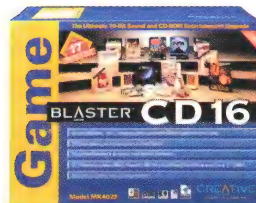
The Sound Blaster™ Discovery CD™ 16 kit includes everything you need to explore the expanding universe of multimedia. And now it's more affordable than ever. You get a Sound Blaster 16-bit sound card, double-speed CD-ROM, stereo speakers, microphone, and 15 cool software titles.

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6. The bogus way.

Sure, there are other ways to get into multimedia. But why take a chance? Sound Blaster sound cards and kits are the multimedia sound standard. All the hottest games and software are made to be played on Sound Blaster. Other systems don't seem as real or as cool. And neither do the people who play them.



Of course, all these kits give you 100% Sound Blaster compatibility. And all the technical help you need is just a phone call away. So installation is a no-brainer. Want more information? Just visit your nearest Creative Labs dealer. Or call 1-800-998-5227 Ext. 110.



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- 6.5 lbs.

T2400CS FEATURES:

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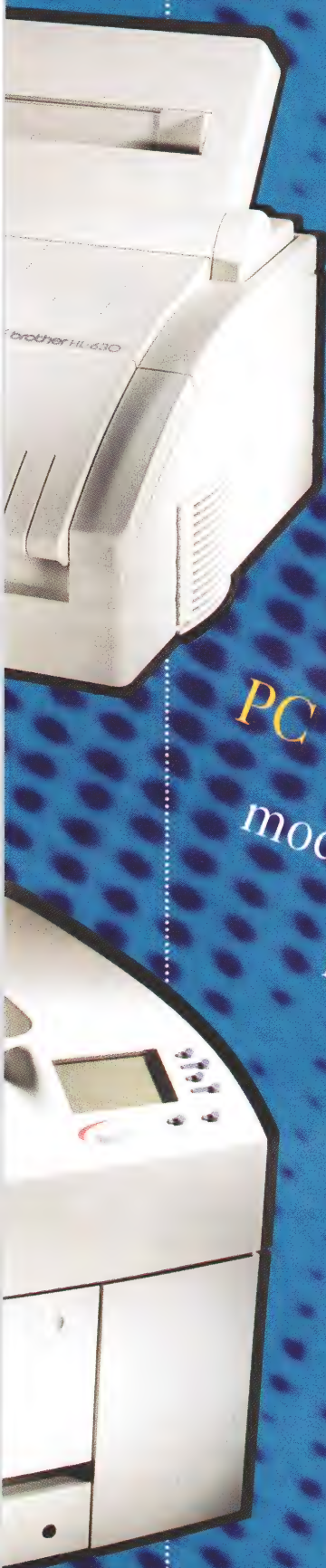
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Circle 228 on reader service card



The news in lasers? More printer for less money.

Clockwise from upper left: Hewlett-Packard LaserJet 4MV, Brother HL-630, Lexmark Optra R, Texas Instruments microLaser PowerPro



LASER PRINTERS

The Price Is Right

PC World reviews 30 printers—inexpensive models, midrange speedsters, and high-end network powerhouses. **By Eric Knorr**

Laser printers were once a luxury. But with street prices currently dipping below \$400, there has never been a better time to indulge in the speedy performance and razor-sharp output that a laser printer offers. And although ink jet printers still enjoy a price advantage over lasers, you just can't beat the speed, quality, and versatility of a good laser.

The only bad news is that choosing the right laser printer is more complicated than ever. That's why we rounded up all the black-and-white lasers we could get our hands on, tested their speed, and submitted their output to a panel of judges who scrutinize printed matter for a living. We also got our hands dirty—changing the paper, installing software, and clearing out paper jams.

The 30 printers we tested fell into three major categories, which we define by the three Ps: price, paper handling, and pages per minute (ppm). With a few exceptions, we define personal printers as those that cost less than \$750 on the street, are rated for 6 ppm or less, and come in a compact shape suitable for the desktop. In this review, 15 products met these criteria. In the midrange are so-called workhorse lasers, which cost \$2000 or less, can usually handle 250 or more sheets of paper, and are rated at speeds between 8 ppm and 12 ppm. We tested nine workhorse lasers that are fast and small enough to service five or ten users—or a small business. Finally, six printers had the impressive speed, paper capacities, and network connectivity (not to mention high price) to qualify as network printers. These powerful beasts can churn out 16 to 20 pages per minute and hold enough paper to keep a whole floor of users happy.

Hewlett-Packard's LaserJets are the most popular printers ever created. But HP's line of LaserJet 4 printers is getting a little long in the tooth, so users will find competing products that are newer, swifter, and less expensive. Of course, HP won't sit still for

Surprisingly, speedy little printers like the Brother HL-630 printed test documents in less than double the time of network monsters.

long, and an upcoming line (presumably the LaserJet 5) promises to once again raise the bar on laser printing.

How Laser Printers Work

The key issue is print resolution, measured in dots per inch (dpi). Almost all printers output at either 300 or 600 dpi, though a few go as high as 1200 dpi. Generally, higher resolutions yield better-looking pages, since moving from 300 dpi to 600 dpi quadruples the number of dots on the page. In addition, nearly all these machines feature *resolution enhancement*, which uses precise placement of smaller-than-normal dots to smooth out curves and diagonal lines in text and line art.

These printers use either a laser or a row of LEDs (light-emitting diodes) to etch an electrostatic image of the page on a photo-sensitive drum, onto which toner sticks. The toner is fused to the paper at a temper-

BEST BUYS

W

hile the quality and value of laser printers have improved over the past year, several printers definitely stand



apart for their attractive output, swift processing, and reasonable prices. Among personal printers the Brother HL-630 is a triple threat, with an incredible \$399 street price, top-notch performance, and excellent output for a 300-dpi model.

In the midrange, the Lexmark Optra R is hands-down the most sophisticated and convenient printer we've seen; add exquisite 1200-dpi output quality, the fastest per-

formance in its class at 300 dpi, and nifty bidirectional controls, and the Optra is an easy Best Buy. The Texas Instruments microLaser PowerPro is a low-cost workhorse printer that

offers similar value, including impressive 600-dpi output, but in a small footprint.

Finally, the Hewlett-Packard LaserJet 4MV stands alone among network behemoths. The 4MV was not only fast—running rings around some of its competition—it produced top-quality output as well. The kicker was its silky-smooth network setup, making it the only printer we can recommend for network neophytes.

ature of about 400 degrees Fahrenheit. Print quality depends on how finely the image is rendered on the drum, and how accurately toner dots transfer to the page.

While most 300-dpi printers get by on 1MB or 2MB of RAM, 600-dpi models usually need 4MB or 6MB to handle fonts and

lishers, one graphic designer, and one industrial designer. The panel studied Corel-Draw printouts under controlled conditions, and rated them on a 100-point index, with scores ranging from 89 to 28.

The conclusions of these experts are good news for you. Although some printers had problems with subtle tasks, such as printing small fonts, reversed hairlines, or complex scanned photos, the variation among printers at identical resolutions was relatively small. In fact, a single printer can produce quality that varies substantially between printouts, depending on factors such as toner level and humidity.

Better yet, you don't have to buy a PostScript printer to enjoy stunning output. While the PostScript page description language is used by Macintosh computers and most professional printing services, all these printers can handle Windows TrueType fonts, which can be applied at virtually any size in a Windows document. And since TrueType fonts can be downloaded from your PC's hard disk, it makes little difference whether a printer includes resident fonts. That said, PostScript is still a must for anyone doing desktop publishing and sending work to an outside service bureau.

Whenever a printer had PostScript capability, we printed our test pages in PostScript mode. As we suspected, our judges saw little variation in output quality between printers that did or did not have PostScript. However, you'll find a large number of PostScript printers in the work-

graphics reliably. Finally, three printers—the NEC Silentwriter SuperScript 610, the Lexmark WinWriter 200, and the Laser-Master WinPrinter 1000—use your PC's RAM and processor instead of components internal to the printer. This lowers the cost of the printer but slows system performance during print jobs.

Image Is Everything

So much for the *science* of output quality—the proof is in the printout. *PC World* printed test documents that exercise the abilities of these printers, with text from 4 to 62 points in size, plus line art, halftones, solid blacks, and reverse (white-on-black) lines and text. To judge output quality, we employed the services of the Harbinger Group, a San Francisco design, communications, and strategic planning company, which put together a group of five experts—three professional desktop pub-

horse and network printer sections, because those doing professional work or sharing a printer with Macintoshes require it.

What Speed Really Means

Every print engine—the hunk of hardware inside a printer that produces the page—has a speed rating measured in pages per minute. This rating gives you an idea of how fast a printer can spit out a steady stream of unformatted text under optimal conditions. In other words, the rating is always faster than what you see in real life. Graphics (including Windows text) slow down print jobs, since the printer's microprocessor must chew on incoming data to turn it into a rendered page.

We used three of the most popular Windows applications—Microsoft Word, Microsoft Excel, and Aldus PageMaker—to output actual business documents that test performance under real-world conditions. Because word processing documents constitute the vast majority of print jobs, we weighted the five-page Word test heavily in judging overall value.

While network monsters like the Xerox 4520mp and the HP LaserJet 4MV cut through pages fast—especially on long text documents—we were surprised to find that speedy little printers like the Brother HL-630 could print our test documents in less than double the time of their bulkier brethren. And several midrange models were at least as fast as the majority of network printers. Still, we found some undeniable patterns: Network printers blazed a trail for the workhorse models to follow, with personal printers trotting along last.

Software Helps Connect the Dots

We generally found these printers easy to install—as long as installation involved a single PC and not a full-blown network. Network installation generally requires familiarity with Novell NetWare and its printer utilities (or with another network operating system). But setting up a stand-alone printer under Windows is usually simple: You run a utility that acts like any other Windows installation routine and start printing; or you install the printer's Windows driver manually using Control Panel. In a couple of cases, buggy drivers or installations made this process needlessly painful.

Some printers—the Mannesmann Tally T9008, the Citizen ProLaser 6000, the

Panasonic KX-P4430, and the Fujitsu models—lack a dedicated Windows driver and instead use the LaserJet drivers that come with Windows. With the exception of the Fujitsu models, printers lacking their own Windows driver produced poor output.

Far more useful is software that reports what's happening with your print job, especially on a network, where it's nice to know if the printer down the hall is out of paper *before* you try to fetch your printout. All the network printers in our review included this software, and some neat Print Manager replacements came bundled with several of the personal and workgroup models.

Paper Tigers

The ability to handle gobs of paper is part of the definition of a network printer. But there's more to paper than quantity. Duplex printing (printing on both sides) can conserve paper and create professional-looking printouts, and large-sheet (such as 11-by-17-inch stock) paper handling can put a big spreadsheet or a two-page layout on a page.

Personal printers should have a straight paper path to handle special stock, such as envelopes and transparencies. Only about half offer this feature—the rest run the risk of jammed output.

PC World obtained estimated street prices for these printers, and we use those prices to help us choose the winners in each category. Before buying, consider the total cost per page, which includes the price of the printer, paper, and consumables such as toner cartridges. Toner cartridges last from 1600 to 14,000 pages and cost from \$22 to \$314. In addition, some printers require that you replace the print drum, fuser, or other components at specified intervals. In the review we note the availability of consumables, as well as whether the estimated cost seemed especially high or low.

Eric Knorr is a contributing editor for PC World and the editor and principal author of The PC Bible (Peachpit Press, Berkeley, California, 1995). Michael Desmond is an assistant editor for PC World.

INK JET OPTIONS

Laser printers create high-quality output, but don't overlook great deals available on ink jet printers. They can match the low price of dot matrix printers (though dot matrix is the best solution for printing multipart forms and labels), yet can provide output quality on a par with 300-dpi lasers. And here's a surprise: They can even match the speed of personal lasers when printing

short documents. The \$199 Canon BJ-100 won a Best Buy in our January review of ink jets ("Laser Quality for \$199?"), thanks to its rock-bottom price, space-saving design, and impressive 300-dpi output. Two other Best Buy printers were the \$249 Canon BJ-200e, which gives speedy output as well, and the \$299 HP DeskJet 540, with unmatched features and ease of use. Many ink jet printers have optional color upgrades for under \$50, but getting color output on an ink jet

printer is agonizingly slow, and the cost of consumables goes up significantly.

If you need compelling full-color printouts, take a look at our October 1994 review of low-cost color printers ("High Color, Low Cost"). The \$1400 HP DeskJet 1200C garnered top mention thanks to its unmatched text and color image quality, speedy output, and PostScript and networking options. But the \$590 Canon BJC-600 and \$570 HP DeskJet 560C deliver comparable print quality at less than half the price. Finally, the \$699 Epson Stylus Color—which appeared too late for our October review—offers even better color and 720-dpi resolution at a competitive price. Of

course, professional color output requires a real investment, with high-end color laser, thermal wax, and dye sublimation printers that run from \$2000 to \$10,000.

—Michael Desmond



Canon BJ-100

Personal Printers

Brother HL-630



A laser printer for under \$400? With speed a nose behind that of the fastest personal models we tested? This combination—plus output quality matching the HP LaserJet 4Ls—makes the HL-630 a runaway Best Buy.

Homely-looking and a bit of a desk hog, the Brother HL-630 uses a short, straight paper path that requires few moving parts—and protects against bothersome jams. You won't waste time setting up this printer, either: Its straightforward installation utility quickly copies over the Windows driver and a nice little collection of TrueType fonts. The toner light may flash more often than you'd like (a toner cartridge lasts a mere 3000 pages), but replacements cost only \$39.95, yielding a low cost per page. You just can't beat this deal.

Street price: \$399
Maximum resolution: 300 dpi
Rated engine speed: 6 ppm
Output quality rating: Good
PostScript: Not available
Installed/maximum paper capacity: 200/200 sheets

Canon LBP-430

Never heard of the Canon LBP-430? Its print engine and design are almost identical to the popular HP LaserJet 4Ls. But the LBP-430 delivered the best print quality of any 300-dpi personal printer. However, the LBP-430 was the slowest printer in the review, placing dead last in PageMaker and next to last in Excel.

The indicator lights on the Canon LBP-430 provide more information than the LaserJet 4Ls, and the installation utility (with excellent software-based documentation) is the best we reviewed. Couple this with quality output and a low price, and the LBP-430 is a solid buy—if you're not in a hurry.



Street price: \$599
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Good
PostScript: Not available
Installed/maximum paper capacity: 100/100 sheets

Citizen ProLaser 6000

The Citizen ProLaser 6000 is one fast 300-dpi printer—faster than the Best Buy Brother HL-630, and nearly as fast as the 8-ppm Fujitsu PrintPartner 8000. But this printer has its rough edges, particularly in output quality, where it failed to adequately reproduce the hairline curves on our test document. Furthermore, the ProLaser costs a hefty \$679, which is



Street price: \$679
Maximum resolution: 300 dpi
Rated engine speed: 6 ppm
Output quality rating: Average
PostScript: Not available
Installed/maximum paper capacity: 150/400 sheets

quite a lot for a no-frills printer without a power-saving sleep mode or its own Windows driver. If you need a fast text-only machine, the ProLaser may be worth its high price. Otherwise, pass it by.



Street price: \$499
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Average
PostScript: Optional
Installed/maximum paper capacity: 100/100 sheets

Epson ActionLaser 1100

The perfect laser for tight spots, the Epson ActionLaser 1100 measures 13 inches wide by 10 inches deep by 10½ inches high. And at just 16 pounds, it's a wonder they didn't put a carrying handle on the thing. The \$499 street price is also easy to bear.

Unfortunately, there's no manual feed slot—you must remove letter-size paper to use special stock—and

you can't swap the Centronics parallel port with any other. And our judges rated the ActionLaser's printouts slightly below the LaserJet 4Ls. Still, installation and printer control software work well, and a PostScript option costs only \$119.

You can also boost RAM using low-cost SIMMs. If smaller is better, the ActionLaser is the printer for you.



Street price: \$465
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Average
PostScript: Optional
Installed/maximum paper capacity: 100/100 sheets

Fujitsu PrintPartner 4000

One of five LED printers, the 4000 delivers overall performance on a par with the LaserJet 4Ls, with slightly lower print quality (our reverse hairline disappeared entirely). A low \$465 street price and \$275 PostScript

option are tempting. But the 4000 suffers from fairly complicated maintenance. Replacement toner cartridges are cheap at \$22, but last just 1600 pages. The \$149 print unit is good for only 10,000

pages—which a real paper addict can surpass in a year—and a separate fuser unit gives out at 60,000 pages. The compact, low-profile 4000 also lacks a straight paper path, which in small printers may lead to jams when you use special stock.



Street price: \$699
Maximum resolution: 300 dpi
Rated engine speed: 8 ppm
Output quality rating: Average
PostScript: Optional
Installed/maximum paper capacity: 100/100 sheets

Fujitsu PrintPartner 8000

In a hurry? The Fujitsu PrintPartner 8000 is the fastest personal laser going. We'd usually lump an 8-ppm

printer in the workhorse category, but this little unit lacks the paper capacity and connectivity to be anything but a desktop speedster. The PrintPartner 8000 looks and acts like the 4000, with the same complicated consumables situation and lack of a straight paper path. But it does produce slightly better print quality (our reverse hairline showed up, albeit faintly). If you can afford it, the best role for this printer might be as a speedy little unit for proofing PostScript documents, though other printers offer superior output quality.

Hewlett-Packard LaserJet 4L

Small, quiet, and slow, the LaserJet 4L is the least expensive Hewlett-Packard laser printer you can buy. The 4L's runaway popularity makes consumables easy to find, and HP's reputation is excellent.

But this safe bet in personal printing is showing its age. It looks like the Canon LBP-430, and shares its sluggish performance, but print quality is unexceptional. If you're an HP loyalist, the 4L won't do you wrong; but you can get better deals and better print quality with the faster and cheaper Brother HL-630 and Okidata OL400e.



Street price: \$650
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Good
PostScript: Not available
Installed/maximum paper capacity: 100/100 sheets



Street price: \$1095
Maximum resolution: 1000 dpi
Rated engine speed: 4 ppm
Output quality: Excellent
PostScript: Included
Installed/maximum paper capacity: 250/250 sheets

LaserMaster WinPrinter 1000

The LaserMaster WinPrinter 1000 is really a high-resolution desktop proofing station, with gorgeous 1000-dpi output clearly superior to that of other personal printers. At \$1095, it's also the costliest in its category—and the slowest in Word for Windows.

Identical in appearance to the Canon LBP-430, the WinPrinter is one of three units we tested that use your system's CPU and memory to process jobs—so machines faster than our 60-MHz Pentium test bed will improve its performance. But you must install an ISA board and Windows software, which makes this the hardest personal laser to set up. It also needs at least 10MB of system RAM to print, so be prepared to shell out some extra cash if your PC isn't up to snuff. As a desktop proofing system, the WinPrinter 1000 is an intriguing buy.

Lexmark WinWriter 200

The Lexmark WinWriter 200 pops out eye-catching pages, matching the Canon LBP-430 in halftone quality but producing slightly jaggier text. The WinWriter is relatively fast for a 4-ppm printer, and

its small footprint, combined with a low \$500 street price, is attractive. But look closer. The construction could be better, with a plastic flip-up output tray that seems certain to break under even moderate use. And the WinWriter 200 was the only printer we tested that couldn't print the scanned photos in our Corel-Draw output quality test file. (Lexmark says this is a Corel problem, which the company acknowledges.) Add high per-page costs, and the WinWriter is hard to recommend.



Street price: \$500
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Good
PostScript: Not available
Installed/maximum paper capacity: 150/150 sheets



Street price: \$399
Maximum resolution: 300 dpi
Rated engine speed: 6 ppm
Output quality rating: Average
PostScript: Optional
Installed/maximum paper capacity: 50/200 sheets

NEC SuperScript 610

The NEC Silentwriter SuperScript 610 finished fourth in its class in our speed tests, and even managed to break the \$400 price barrier. But print quality is unexceptional: Our judges ranked it well below that of the HP LaserJet 4L, with subpar quality in both text and line art.

Like the LaserMaster WinPrinter, the SuperScript 610 relies on your PC's CPU and memory to process print jobs, so your system will slow down while it's printing. But this printer includes exceptional Windows software, with an excellent Print Manager replacement and a sweet selection of 20 TrueType fonts you can install on your hard disk. The cost of cartridges is high (\$115, more than the \$99 PostScript option), but if you have a fast PC, the SuperScript 610 will give the Best Buy Brother HL-630 a run for its money.

Okidata OL400e

The Okidata OL400e is an impressive little machine. Based on an LED engine, the OL400e produced top-notch 300-dpi printouts, and was the fastest 4-ppm unit tested. Add a \$501 street price and low cost per page, and the OL400e narrowly misses winning a Best Buy.

The well-designed OL400e is slimmer than the HP LaserJet 4L, but includes a useful LCD control panel. Envelopes and special stock end up on a pull-out rear tray, keeping printouts off the floor. The only drawback is the short, 2000-page life of toner cartridges (which are cheap and widely available). The Okidata OL400e is a worthy alternative to the Brother HL-630, especially for tight spaces.



Street price: \$501
Maximum resolution: 300 dpi
Rated engine speed: 4 ppm
Output quality rating: Good
PostScript: Not available
Installed/maximum paper capacity: 100/450 sheets

PAPER TIGERS

We didn't pick Best Buys on the strength of output alone, but all our picks produced top-notch quality in their classes. The Brother HL-630—the only 300-dpi Best Buy—produced solid blacks and clear text, making it an excellent choice for small offices. But the Lexmark Optra R stole our hearts with exquisite 1200-dpi output that borders on professional typeset quality—check out the subtle grays and fine detail in the face and whiskers of the tiger. The Texas Instruments microLaser PowerPro and Hewlett-Packard LaserJet 4MV produced excellent 600-dpi output, topping the 600-dpi ranks of workhorse and network printers, respectively.

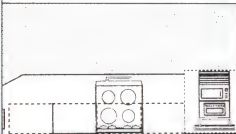
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Brother HL-630



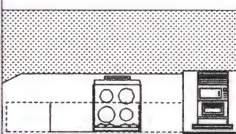
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Texas Instruments microLaser PowerPro



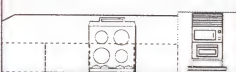
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Lexmark Optra R



This is a test of a print quality
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Hewlett-Packard LaserJet 4MV



Street price: \$659
Maximum resolution: 600 dpi
Rated engine speed: 4 ppm
Output quality rating: Average
PostScript: Not available
Installed/maximum paper capacity:
100/450 sheets

Okidata OL410e

Would you believe 600-dpi printing for \$659? The Okidata OL410e has it, sort of. This LED printer boasts 600-dpi-like quality, but a narrow tonal range hampers gray shading, yielding scanned photos worse than those of any 600-dpi printer except the Mannesmann Tally. It failed to print the reverse hairline and floor-plan background in our test page.

Except for the higher resolution and a slower tested print speed, the OL410e is identical to the OL400e.

It has the same solid design, easy software installation, and optional paper tray, which holds up to 450 sheets. Had this printer lived up to its 600-dpi potential, it would have been irresistible—though you might see better results with an update of the version 1.0 Windows driver we used in our tests.

Panasonic KX-P4430

This aging printer can't cut it against today's tough competition. Coarse halftones dragged it to the bottom in output quality, and its speed was next to last. It's also big and heavy for its 100-sheet paper capacity, with a protruding paper tray that can get in the way. Finally, the \$699 street price is one of the highest among the personal units. Panasonic is refreshing its printer line, and a newer version should provide better value.



Street price: \$699
Maximum resolution: 300 dpi
Rated engine speed: 5 ppm
Output quality rating: Poor
PostScript: Not available
Installed/maximum paper capacity:
100/200 sheets

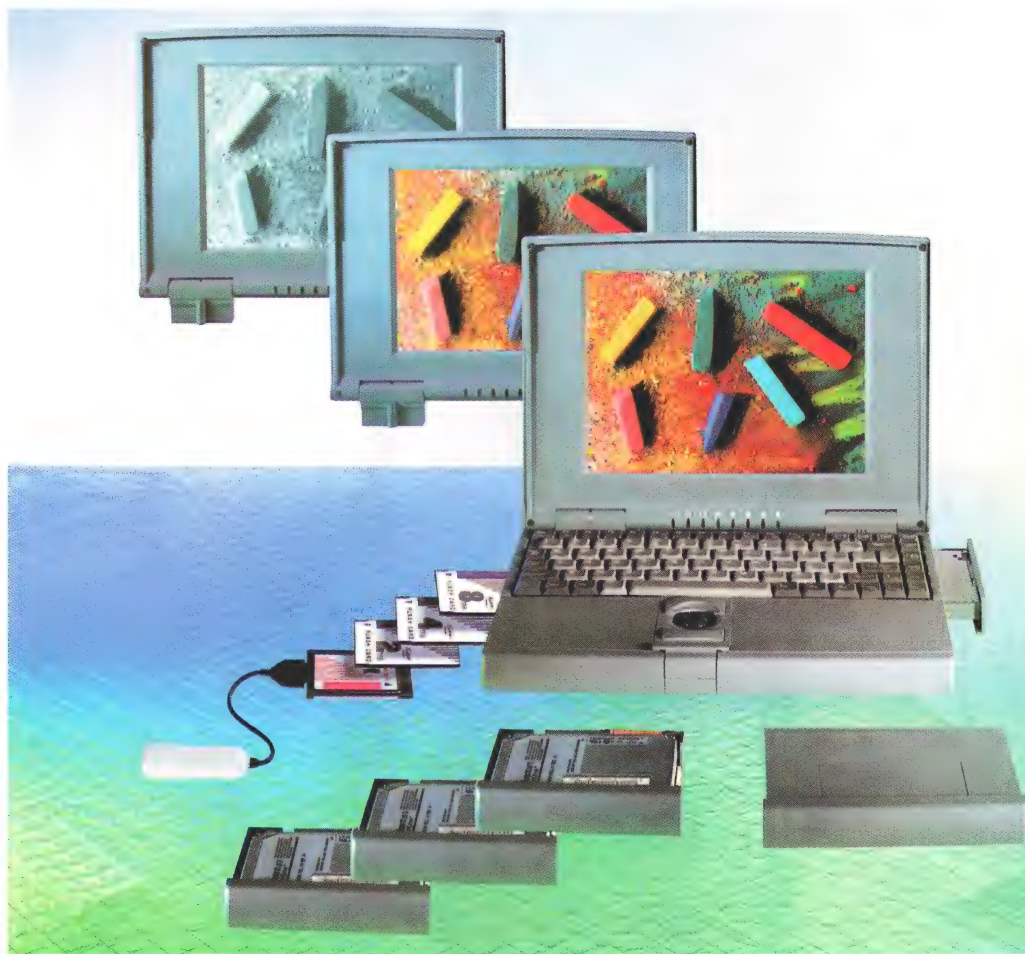


Street price: \$650
Maximum resolution: 300 dpi
Rated engine speed: 5 ppm
Output quality rating: Poor
PostScript: Included
Installed/maximum paper capacity:
250/650 sheets

Texas Instruments microWriter PS23

The Texas Instruments microWriter was one of two PostScript-capable personal printers, suiting it for homes or small offices that have both a Mac and a PC. A year and a half ago, this LED printer won a Best Buy ("Laser Printers From \$700," July 1993), but the aging microWriter languishes near the bottom in our speed tests, and suffered from uneven output of blacks, even at maximum darkness—a setting that gave a slight gray tinge to the whites. Scanned photos in the CorelDraw output page were also poor. For low-cost PostScript, consider the inexpensive PostScript option on the Epson ActionLaser 1100 or NEC Silentwriter SuperScript 610.

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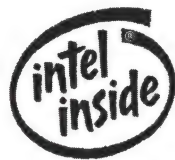
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Circle 107 on reader service card



Street price: \$980
Maximum resolution: 600 dpi
Rated engine speed: 5 ppm
Output quality rating: Good
PostScript: Optional
Installed/maximum paper capacity: 300/800 sheets

Xerox 4505

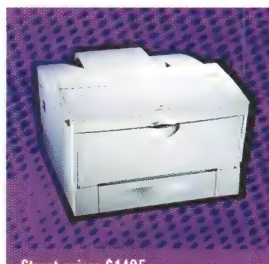
The Xerox 4505 produced the best-looking printouts of any personal laser we tested except the LaserMaster WinPrinter 1000. With a large footprint, complex manuals, a rocket-science control panel, and a 300-sheet paper capacity, the 4505 seems out of place in the personal crowd. But the printer's 5 ppm engine speed and sluggish performance are too slow for workgroups.

What you get is some of the best print quality you can buy for the price. A \$299 PostScript option is a plus. Consider the 4505 if graphics or desktop publishing are important.

Workhorse Printers

Apple LaserWriter Select 360

The Apple LaserWriter Select 360 turns out beautiful pages, but its output quality still placed just third among workhorse printers. While text and lines looked terrific, a very slight horizontal banding in one of the scanned photos put it behind Texas Instrument's microLaser PowerPro, the best 600-dpi printer in its class. Next-to-last printing speed, however, prevented this affordable unit from winning a Best Buy. It has built-in Adobe PostScript Level 2, and can run with a LaserJet III driver (albeit at 300 dpi). You upgrade memory with standard SIMMs, and toner cartridges are readily available. Serial, parallel, LocalTalk, and



Street price: \$1495
Maximum resolution: 600 dpi
Rated engine speed: 10 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 350/850 sheets

Centronics ports all come standard—and the Select 360 switches among them automatically. If your workgroup uses a mix of Macs and PCs, this printer is an excellent choice.



Street price: \$1699
Maximum resolution: 600 dpi
Rated engine speed: 12 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 300/800 sheets

Digital Equipment DEClaser 3500

The DEClaser 3500 uses a faster version of the print engine that's in the Apple LaserWriter Select 360—yielding swift performance—and it includes built-in Adobe PostScript

Level 2. But the DEClaser produced more severe horizontal banding than the Apple printer, while poor contrast in the halftones put the printer's output quality near the bottom of the 600-dpi heap. The problem may be the unoptimized Windows PostScript driver, an Adobe Default Printer driver, which crashed during installation. The unit also had some trouble emulating a PCL 5 printer.

Too bad. This unit has the slickest Windows printer utility we've seen, with an animated printer status icon and well-designed dialog boxes for adjusting image quality and even adding watermarks. If the DEClaser gets a better driver and a lower price, check it out.



Street price: \$1799
Maximum resolution: 600 dpi
Rated engine speed: 10 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 300/800 sheets

GCC Elite 600et

The GCC Elite 600et features impressive 600-dpi output indistinguishable from that of the Apple LaserWriter Select 360. It also enjoys an edge in speed—though it had problems with some of the PostScript fonts in our PageMaker test at 600 dpi. Still, for the price of \$1799, better deals can be found elsewhere.

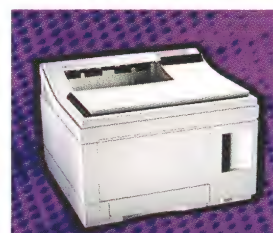
The Elite 600et is one of the few printers to come with a SCSI interface that can connect to a hard disk, and the 6MB unit can be boosted up to 20MB with standard SIMMs for demanding tasks. LocalTalk, Ethernet, parallel, and serial ports are built in, and the printer can switch among them automatically. A unique feature is the Elite 600et's ability to print within a tenth of an inch of the page's edge, an important feature for desktop publishers who do serious printing.

Hewlett-Packard LaserJet 4M Plus



While the HP LaserJet 4M Plus was one of the fastest workgroup printers we reviewed, its \$2000 street price (which includes Adobe PostScript Level 2) is higher than that of any other in this class. And while the 4M Plus produced good text output, its handling of grays and halftones on our sample page was mediocre.

The LaserJet 4M Plus comes with LocalTalk, Ethernet, parallel, and serial ports, enabling you to connect it to a mix of Macs and PCs right out of the box. You also get HP's legendary construction and reliability, along with excellent software, clearly written manuals, and easily available consumables. But these fine HP attributes aren't enough to justify the price and relatively high per-page costs of this printer. Without PostScript, this unit becomes the LaserJet 4 Plus and costs about \$500 less on the street, a much better deal.



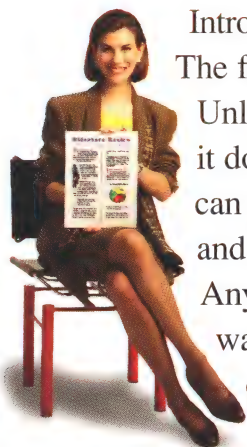
Street price: \$2000
Maximum resolution: 600 dpi
Rated engine speed: 12 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 350/850 sheets

continued on page 142

WordPerfect and Novell
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Introducing PerfectOffice.™
The first network suite.
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can work with other people
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You don't work alone. Why should your software? PerfectOffice is the first suite designed to work with your network. So you can communicate, collaborate and cooperate with other people. It even makes installing, maintaining and managing software easier. Microsoft Office, on the other hand, is designed to work on your desktop. Alone.

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interface. So do the programs in Microsoft Office. But PerfectOffice uses more common code and components, reducing system requirements. Plus, it supports Windows technologies like OLE 2.0 in more programs than Microsoft Office. Irony, isn't it?

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PerfectOffice is so automatic, it even corrects spelling errors as you type. We know, so does Microsoft



	PerfectOffice 3.0 Standard Edition	Microsoft Office 4.2 Standard Edition
Programs have consistent interfaces	YES	YES
Integrated E-mail, calendaring and scheduling**	YES	NO
Workgroup publishing features	YES	NO
Number of applications with OLE 2.0 support	Four	Three
Number of applications with on-the-fly spell checking	Three	One
Automated tasks that work independent of applications	YES	NO
Grammar checker can rewrite entire sentences	YES	NO
Intelligent find and replace	YES	NO
Ability to record scripts (macros) across applications	YES	NO
Supports both Visual Basic & AppWare programming tools	YES	NO
Six months of free, toll-free technical support*	YES	NO

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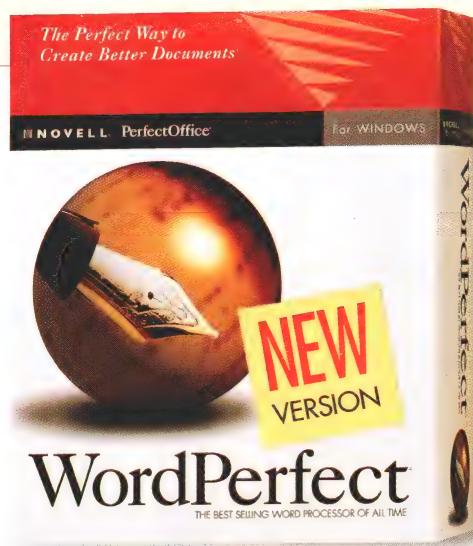
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faxes are always
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too long?

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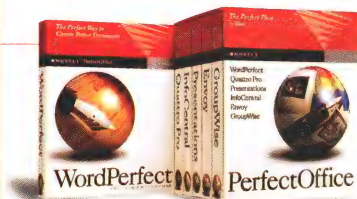
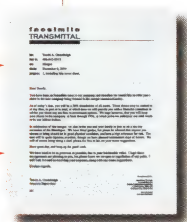
indicate the attributes you want adjusted. WordPerfect® does the rest. What else would you expect from the world's best-selling word processor?

And WordPerfect has many other work-saving automation tools, too. Like our new Document Experts and Templates. They make creating fully formatted documents as easy as clicking a button. WordPerfect will even look up addresses and fax numbers for you. It's that automatic. And with our new Table Expert, creating and formatting tables is just as easy.

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FEATURES COMPARISON

Speed, Paper Handling, and Resolution Help Set Printers Apart

	PERSONAL PRINTERS									
	Brother HL-630	Canon LBP-430	Citizen ProLaser 6000	Epson ActionLaser 1100	Fujitsu PrintPartner 4000	Fujitsu PrintPartner 6000	Hewlett-Packard LaserJet 4L	WinPrinter 1000	WinWriter 200	Lamark
● Yes ○ No ○ Optional										
Standard features										
Street price	\$399	\$599	\$679	\$499	\$465	\$699	\$650	\$1095	\$500	
Maximum resolution (dots per inch)	300	300	300	300	300	300	300	1000	300	
Rated engine speed (pages per minute)	6	4	6	4	4	8	4	4	4	
Installed/maximum RAM (MB)	.5/2	1/5	1/5	1/5	1/9	1/9	1/2	0/0	.5/4.5	
Resolution enhancement	○	○	●	●	●	●	●	●	○	
Printing process	laser	laser	laser	laser	LED	LED	laser	laser	laser	
Emulations and connectivity										
PostScript	○	○	○	Level 2	Level 1	Level 1	○	Level 1	○	
PCL	PCL 4	PCL 5	PCL 5	PCL 5	PCL 5	PCL 5	PCL 5e	PCL 4	PCL 4	
Automatic emulation/port switching	●/●	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	
Parallel/serial ports	●/○	●/○	●/●	●/○	●/○	●/○	●/○	○/○	●/○	
Bidirectional parallel capability	●	○	○	●	●	●	●	○	●	
LocalTalk/Ethernet/Token Ring support	○/○/○	○/○/○	○/○/○	○/○/○	○/○/○	○/○/○	○/○/○	○/○/○	○/○/○	
Design and construction										
Dimensions (width x depth x height, in inches)	14.4 x 14.3 x 7.2	14.5 x 14.9 x 6.1	14.1 x 17.9 x 8.9	13 x 10 x 10.5	15.2 x 13.6 x 5.1	15.2 x 13.6 x 5.1	14.5 x 14 x 6.5	14.3 x 13.9 x 5.8	14.8 x 12.5 x 8.8	
Weight (pounds)	16.6	18	18.6	16	15.8	15.8	17.5	15.6	15.4	
Energy Star compliant	●	●	○	●	●	●	●	○	●	
Monthly duty cycle (pages)	3000	8000	5000	10,000	3000	3000	8000	1000	2000	
Toner cartridge life in pages (5% coverage)	3000	3000	6000	4000	1600	1600	3000	3000	3000	
PCMCIA slot/font cartridges	○/○	○/○	○/●	○/○	●/○	●/○	○/○	○/○	○/○	
Hard drive support	○	○	○	○	○	○	○	○	○	
Paper handling										
Installed/maximum number of paper trays	1/1	1/1	1/2	1/1	1/1	1/1	1/1	1/1	1/1	
Installed/maximum paper capacity	200/200	100/100	150/400	100/100	100/100	100/100	100/100	250/250	150/150	
Maximum paper size	legal	legal	legal	legal	legal	legal	legal	legal	legal	
Installed/maximum number of sheets out	100/100	50/50	100/120	50/50	50/50	50/50	50/50	0/0	50/50	
Duplex printing capability	○	○	○	○	○	○	○	○	○	
Resident fonts (bit map/TrueType/PostScript)	●/●/○	●/○/○	●/●/○	●/○/○	●/●/○	●/●/○	○/○/○	○/●/○	○/●/○	
Front panel controls	●	●	●	○	●	●	○	○	○	
Network software	○	○	○	○	○	○	○	○	○	
Service and support										
Warranty (years)	1	2	2	2	1	1	1	1	1	
Money-back guarantee (days)	0	0	0	0	0	0	0	0	0	
Toll-free phone support	●	●	○	●	○	○	○	○	●	
Daily support (hours)	11	15	8.5	12	10	10	11	9	9	
Weekend support	○	●	○	○	○	○	●	○	○	
On-site service	○	○	○	○	○	○	○	○	●	
Contact	800/276-7746	800/848-4123	800/477-4683	800/289-3776	800/626-4686	800/626-4686	800/752-0900	800/365-4646	800/358-5835	
Reader service number	771	772	773	—	775	775	777	778	779	

Best Buys in red

¹ Information not available from vendor.

						WORKHORSE PRINTERS					
NEC Silentwriter SuperScript 630	Olddata 01-400e	Olddata 01-410e	Panasonic KY-P4430	Texas Instruments microWriter PS23	Xerox 4505	Apple LaserWriter Select 360	Digital Equipment DECwriter 3560	GCC Elite 600et	Hewlett-Packard LaserJet 4M Plus	Lenmark Optra R	Mannesmann Tally 19008
\$399	\$501	\$659	\$699	\$650	\$980	\$1495	\$1699	\$1799	\$2000	\$1850	\$1699
300	300	600	300	300	600	600	600	600	600	1200	600
6	4	4	5	5	5	10	12	10	12	12	8
.25/.25	.5/4.5	2/5	1/5	2/4	2/16	7/16	3/19	6/20	6/38	10/64	10/32
●	○	●	●	○	●	●	●	○	●	●	●
laser	LED	LED	laser	LED	laser	laser	laser	laser	laser	laser	laser

Level 1				Level 1	Level 2
PCL 4	PCL 4	PCL 5	PCL 5	PCL 4	PCL 5e
○/○	●/○	●/●	○/●	○/○	●/●
●/○	●/●	●/●	●/●	●/○	●/●
●	○	○	○	○	●
○/○/○	○/○/○	○/○/○	○/○/○	●/○/○	○/○/○

Level 2	Level 2	Level 2	Level 2	Level 2	Level 2
PCL 5	PCL 5	PCL 5	PCL 5e	PCL 5e	PCL 5e
●/●	●/●	●/●	●/●	●/●	●/●
●/●	●/●	●/●	●/●	●/●	●/●
○	●	○	●	●	●
●/○/○	●/○/○	●/●/○	●/●/○	○/○/○	○/○/○

14.6 x 14.1 x 14.7	12.6 x 14.2 x 6.3	12.6 x 14.2 x 6.3	14.6 x 15.5 x 9.3	13.8 x 14.8 x 10.4	13.9 x 15.5 x 10
17.6	17	17	30.9	33	31
●	●	●	●	●	●
2500	6000	6000	3000	5000	10,000
4000	2000	2000	3000	2500	4000
○/○	○/●	○/●	○/●	○/○	●/●
○	○	○	○	○	○

15 x 18.3 x 8	14.4 x 16 x 10.5	10 x 15.5 x 13.9	16.6 x 15.9 x 11.7	16.1 x 21.1 x 13.1	15.5 x 14.5 x 11.2
26	28.8	28.6	37.2	46	37.8
●	●	●	●	●	●
1	20,000	1	20,000	35,000	20,000
4000	4500	5000	6000	7000	10,000
○/○	●/●	○/○	○/●	○/●	○/●
○	○	○	○	○	○

1/1	1/3	1/3	1/2	1/3	2/3
50/200	100/450	100/450	100/200	250/650	300/800
legal	legal	legal	legal	legal	legal
50/50	100/100	100/100	100/200	230/230	250/250
○	○	○	○	○	○
○/●/○	●/○/○	●/○/○	●/○/○	●/○/●	●/●/○
○	○	○	●	●	●
○	○	○	○	○	●

2/3	1/2	2/3	2/4	1/3	2/3
350/850	300/800	300/800	350/850	200/800	350/850
legal	legal	legal	letter	legal	legal
150/150	350/350	150/150	250/250	250/250	250/250
○	○	○	○	○	○
○/●/●	●/●/●	●/○/●	●/●/●	●/●/●	●/●/○
○	●	●	●	●	●
○	●	○	○	●	○

2	1	1	1	1	1
0	0	0	30	30	0
●	●	●	●	●	●
12	10	10	10	12	12
○	○	○	○	○	○
○	○	○	●	●	○
800/632-4636	800/654-3282	800/654-3282	800/742-8086	800/848-3927	800/275-9376
780	781	781	783	784	785

1	1	1	1	1	1
0	0	30	0	0	0
●	●	○	○	●	●
12	11.5	12	11	9	9
○	●	○	●	○	○
○	○	●	○	●	●
800/538-9696	800/777-4343	800/422-7777	800/752-0900	800/358-5838	800/843-1347
786	787	788	777	779	791

FEATURES COMPARISON

Speed, Paper Handling, Resolution Help Set Printers Apart (cont'd)

- Yes
○ No
◐ Optional

	WORKHORSE PRINTERS (cont'd)			NETWORK PRINTERS					
	Texas Instruments microLaser PowerPro PS23	Texas Instruments microLaser Pro 600	Xerox 4510ps	Apple LaserWriter 16/600 PS	Genicom 7170	Hewlett-Packard LaserJet 4MV	QMS 1660 Print System	Xante Access-Writer 8200	Xerox 4520mp
Standard features									
Street price	\$1640	\$1250	\$1900	\$2400	\$4400	\$3250	\$4000	\$4495	\$4160
Maximum resolution (dots per inch)	600	600	600	600	300	600	1200 x 600	1200	800
Rated engine speed (pages per minute)	12	8	10	17	17	16	16	16	20
Installed/maximum RAM (MB)	6/22	6/22	6/16	8/32	9/9	12/42	12/64	12/64	8/52
Resolution enhancement	○	○	●	●	●	●	●	○	●
Printing process	laser	laser	laser	laser	laser	laser	laser	laser	laser
Emulations and connectivity									
PostScript	● Level 2	● Level 2	● Level 2	● Level 2	● Level 1	● Level 2	● Level 2	● Level 2	● Level 2
PCL	PCL 5	PCL 5	PCL 5e	PCL 5	PCL 5	PCL 5e	PCL 5	PCL 5	PCL 5e
Automatic emulation/port switching	●/●	●/●	●/○	●/●	●/○	●/●	●/●	●/●	●/●
Parallel/serial ports	●/○	●/○	●/●	●/○	●/●	●/●	●/●	●/●	●/●
Bidirectional parallel capability	●	●	●	●	○	●	●	○	●
LocalTalk/Ethernet/Token Ring support	●/○/○	●/○/○	○/○/○	●/○/○	○/○/○	●/●/○	●/○/○	○/●/○	○/●/○
Design and construction									
Dimensions (width x depth x height, in inches)	13 x 14.4 x 12.8	13 x 14.4 x 12.8	13.9 x 15.5 x 10	16.7 x 16.9 x 12.1	18.7 x 18.3 x 13.2	18.1 x 20.6 x 12.5	18 x 20.5 x 12	17.9 x 20.3 x 11.7	20 x 16.4 x 21
Weight (pounds)	32	32	31	40	57.5	51.1	50	60	77
Energy Star compliant	●	●	●	●	●	●	●	○	●
Monthly duty cycle (pages)	10,000	10,000	20,000	3500	25,000	35,000	10,000	10,000	50,000
Toner cartridge life in pages (5% coverage)	12,000	12,000	4000	6000	13,000	8100	6000	6000	14,000
PCMCIA slot/font cartridges	○/○	○/○	●/●	○/○	○/●	○/○	●/○	○/○	●/●
Hard drive support	○	○	○	○	○	○	○	○	○
Paper handling									
Installed/maximum number of paper trays	2/2	2/2	2/3	2/4	2/4	2/2	1/2	2/3	3/4
Installed/maximum paper capacity	500/500	500/500	300/800	350/850	750/2250	350/850	250/750	350/850	750/2250
Maximum paper size	legal	legal	legal	legal	legal	12 x 19 in.	12 x 19 in.	11.8 x 25 in.	ledger
Installed/maximum number of sheets out	250/250	250/250	250/250	0/0	450/1950	250/250	300/300	250/250	500/500
Duplex printing capability	○	○	○	○	●	○	○	○	○
Resident fonts (bit map/TrueType/PostScript)	●/○/●	●/○/●	●/●/●	○/○/●	●/○/●	●/●/●	●/●/●	●/○/●	●/●/●
Front panel controls	●	●	●	○	●	●	●	●	●
Network software	●	●	●	○	○	●	●	○	●
Service and support									
Warranty (years)	1	1	1	1	1	1	1	1	1
Money-back guarantee (days)	30	30	0	0	0	0	0	30	0
Toll-free phone support	●	●	●	●	○	○	○	●	●
Daily support (hours)	12	12	12	12	10	11	9	12	12
Weekend support	○	○	○	○	○	●	○	○	○
On-site service	●	●	○	○	●	○	○	●	○
Contact	800/848-3927	800/848-3927	800/275-9376	800/538-9696	800/436-4266	800/752-0900	800/233-6687	800/926-8839	800/275-9376
Reader service number	784	784	785	786	796	777	798	799	785

Best Buys in red

For more information about all products in this table, circle reader service no. 911.



Street price: \$1850
Maximum resolution: 1200 dpi
Rated engine speed: 12 ppm
Output quality rating: Excellent
PostScript: Included
Installed/maximum paper capacity:
200/800 sheets

Lexmark Optra R



The 1200-dpi Lexmark Optra R boasts the best printing this side of typesetting, with true grays, flawless hairlines, and crisp reverse type right down to 4 points. Amazingly, you can buy this workgroup printing press for just \$1850 on the street, complete with Adobe PostScript Level 2. No doubt: a clear Best Buy.

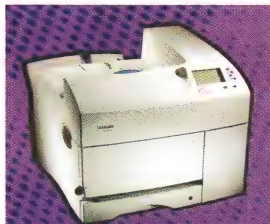
In 600-dpi mode, the Optra R aced the speed tests, but we were more impressed with the elegant design:

Everything fits together beautifully, whether it's the tight fit of the output trays or the easy access to network boards and memory. You can also upgrade the RAM to 64MB, though the 10MB configuration we tested had no trouble printing our page at 1200 dpi.

The Optra is also a real communicator, displaying the printing application and file name on its front LCD panel, while the MarkVision software affords easy PC-based control. The Lexmark Optra R is a must-buy for anyone seeking quality output.

Mannesmann Tally T9008

The Mannesmann Tally T9008 is a rugged, well-built printer rated at 8 ppm. But our judges ranked its output quality lowest among the 600-dpi workhorse printers, with lackluster results on scanned photos. This printer had trouble with our test documents at 600 dpi, failing to complete the PageMaker component of our speed test and the CorelDraw output page. The 300-dpi performance was on a par with the HP LaserJet 4M Plus's. The T9008 could make a decent text printer in rough working environments if you can find it heavily discounted.



Street price: \$1640
Maximum resolution: 600 dpi
Rated engine speed: 12 ppm
Output quality rating: Excellent
PostScript: Included
Installed/maximum paper capacity:
500/500 sheets



Street price: \$1699
Maximum resolution: 600 dpi
Rated engine speed: 8 ppm
Output quality rating: Average
PostScript: Optional
Installed/maximum paper capacity:
350/850 sheets

Texas Instruments microLaser PowerPro



With 600-dpi output and performance that are second to none in its category, the Texas Instruments microLaser PowerPro is the best general-purpose workhorse printer we tested. Adobe PostScript Level 2 is standard, and the reasonable \$1640 street price

includes 6MB of RAM (upgradable to 22MB)—an impressive all-around package that earns the PowerPro a Best Buy.

The PowerPro's excellent, small-footprint design belies its 500-sheet paper capacity. It includes a LocalTalk port, and you get no less than 28 PostScript type families—more than any printer tested had. Setup and installation were a breeze, and the 12,000-page toner cartridge cuts down on maintenance. If you need a workgroup workhorse but don't require 1200-dpi quality, buy this printer.



Street price: \$1250
Maximum resolution: 600 dpi
Rated engine speed: 8 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity:
500/500 sheets

Texas Instruments microLaser Pro 600 PS23

The microLaser Pro 600 is a slower version of the microLaser PowerPro. Print quality was a little less stunning, but the variations are minor. The difference is the Pro 600's \$1250 street price, the lowest in its class. Like the other Texas Instruments printers in this review, the Pro 600

came with skimpy manuals—the user reference manual is an “option.” This unit also had trouble during installation: Its Windows driver crashed Windows' Control Panel. (With the Pro 600 PS67 driver installed it worked fine, however.) Drivers can be fixed, but this printer was one of the slowest 600-dpi workhorse models we tested. If you want this kind of print quality cheap, and you don't care how fast the pages emerge, Xerox's 4505 might do better.

Xerox 4510ps

Identical in appearance to the Xerox 4505, the Xerox 4510ps has two advantages over its twin: Adobe PostScript Level 2 and faster printing. Unfortunately, it's not *that* much faster; at 600 dpi, the 4510ps was the third slowest in its class. And while the output is impressive, it can't touch that of the Lexmark Optra R, which costs \$50 less on the street. The 4510ps is just too slow and too pricey to consider seriously.



Street price: \$1900
Maximum resolution: 600 dpi
Rated engine speed: 10 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity:
300/800 sheets

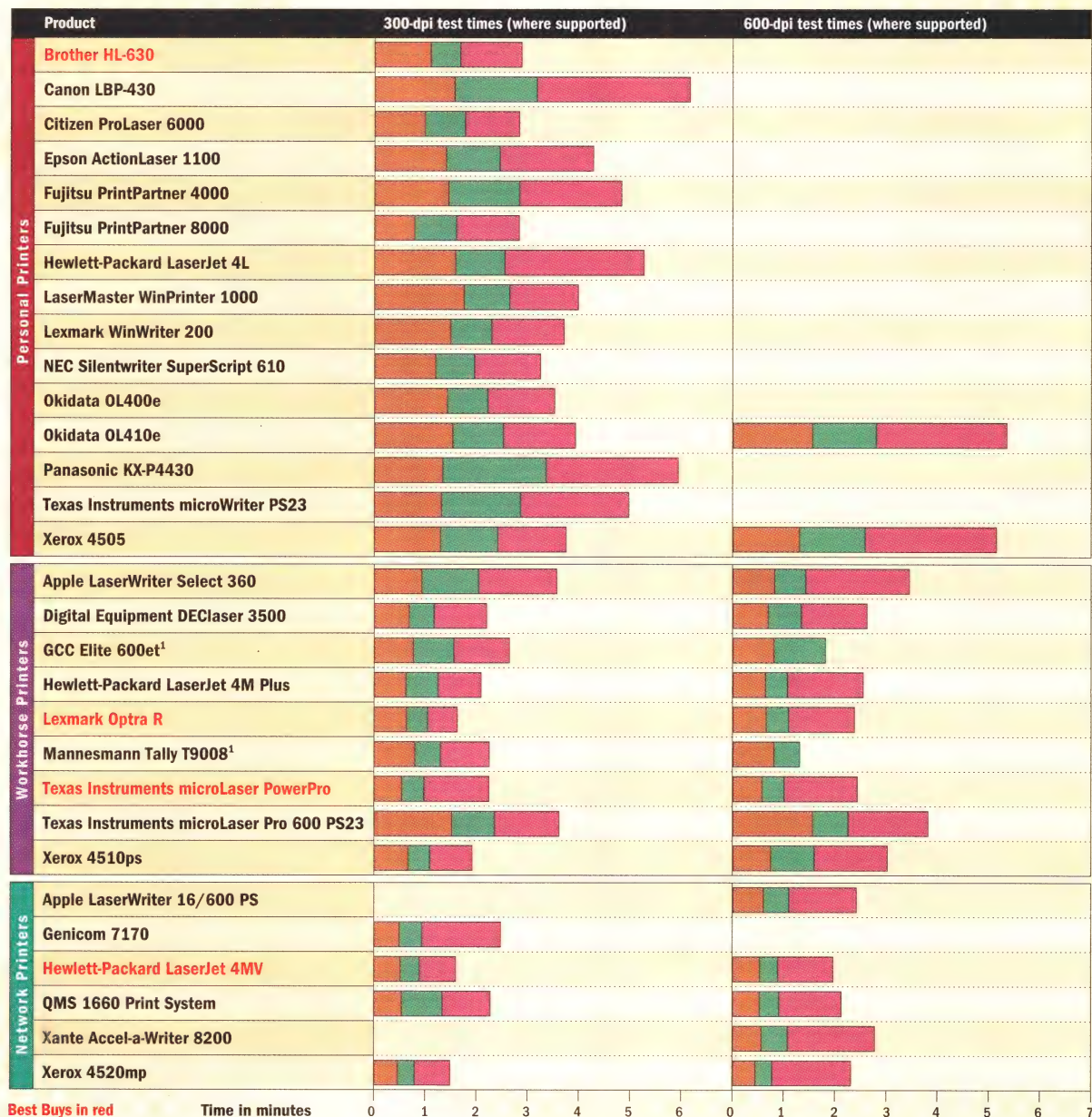
Network Printers

Apple LaserWriter 16/600 PS

The LaserWriter 16/600 PS produced the best 600-dpi output of any printer. Text clarity was superb all the way down to 4 points, and scanned photographs retained subtle grays. At \$2400, the

PC WORLD TEST CENTER REPORT

Best Buys Keep Pace With Speed Demons



¹ Unable to complete PageMaker portion of 600-dpi test.

Methodology

All printers were tested as configured by the vendor, on a 60-MHz Pentium. Where they were available, we used the preferred PCL driver of the printer to test 300-dpi performance and the preferred PostScript or PCL driver to test 600-dpi performance. We ran each test twice on each printer: first, right after the printer and PC were turned on and before anything else was

printed, and then again to check benefits from font and other types of caching. Scores are the average of both tests.

Word 6.0 for Windows

We printed a five-page text document.

Excel 5.0

We printed a two-page spreadsheet with a three-dimensional graph on the second page.

PageMaker 5.0

We printed a three-page newsletter that included several text and display typefaces, bit-mapped images, and hairline rules.

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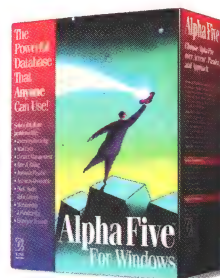


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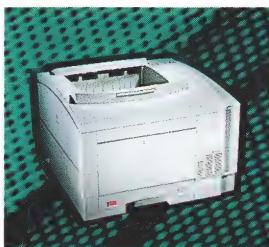
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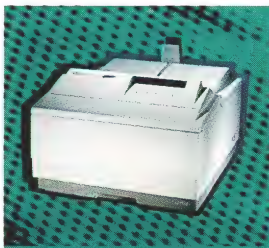


Street price: \$2400
Maximum resolution: 600 dpi
Rated engine speed: 17 ppm
Output quality rating: Excellent
PostScript: Included
Installed/maximum paper capacity: 350/850 sheets
Network news: Failed to send status to PC; best for LocalTalk networks

Genicom 7170

It's hard for a 300-dpi printer like the Genicom 7170 to compete in this fast 600-dpi crowd. The 7170's output is mediocre even by 300-dpi standards, and it was the slowest network printer we reviewed.

On a network, this printer requires a specialist who has hands-on familiarity with NetWare. A cryptic DOS utility provides status updates. One big plus: The 7170 is the only model tested with standard duplexing, a feature just two others offered as an option. But that's not enough to overcome the 7170's high \$4400 street price.



Street price: \$3250
Maximum resolution: 600 dpi
Rated engine speed: 16 ppm
Output quality rating: Excellent
PostScript: Included
Installed/maximum paper capacity: 350/850 sheets
Network news: Easiest network setup; excellent utilities

Hewlett-Packard LaserJet 4MV



We could go on and on about the LaserJet 4MV's stunning 600-dpi output. Or we could sing the praises of its low price and blazing speed. But the HP made everyone else look plain silly with its trouble-free network installation. It was a resounding Best Buy.

Most network printers require familiarity with NetWare's Pconsole or Pserver utilities, but the 4MV excels with its slick utilities and clear

documentation. Excellent Windows software informs users of job status, while administrators can change printer settings remotely. Ethernet and LocalTalk interfaces are included, and Token Ring is optional. The 4MV is what a network printer ought to be, with fast performance, top-notch output, and easy operation.

16/600 is the least expensive network printer we tested, and it includes Adobe PostScript Level 2.

Although this printer came configured for Ethernet, its Windows utility failed to inform workstation users of print job status. An Apple technician couldn't get this feature to work, remarking that it worked fine on a LocalTalk network. Moreover, the 16/600 placed next to last in its class in our speed tests. Great output, but it might be best to leave the 16/600 in its Mac environs.



Street price: \$4400
Maximum resolution: 300 dpi
Rated engine speed: 17 ppm
Output quality rating: Average
PostScript: Included
Installed/maximum paper capacity: 750/2250 sheets
Network news: Duplex printing; tough installation



Street price: \$4000
Maximum resolution: 1200 by 600 dpi
Rated engine speed: 16 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 250/750 sheets
Network news: Difficult installation; good bidirectional communication

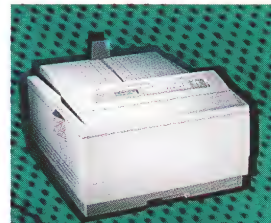
QMS 1660

The QMS 1660 Print System prints 1200 by 600 dpi for results better than 600 dpi. But scanned photos and gray-scale images fared worse, and 1200 by 600 dpi requires 24MB of RAM (installable using standard SIMMs), not the 12MB provided.

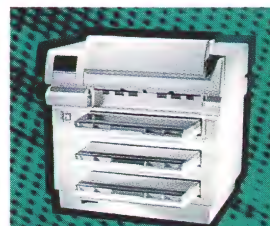
The network installation is for an expert. It took a long call to tech support to get the 1660 to work on our Ethernet LAN. Once running, the Windows print status and administration software performed well, providing status messages within apps. But subpar graphics quality and a high price tag are hard to overlook.

Xante Accel-a-Writer 8200

The 1200-dpi Xante Accel-a-Writer 8200 matched the stellar output of the Lexmark Optra R; but it costs twice as much at \$4495—though it can print on 11-by-17-inch (and even 12-by-19-inch) paper. As a network printer, this model was a bust. We tried valiantly to get it to run on our LAN—until Xante told us it wasn't sure the printer would work with anything besides Apple LocalTalk. But desktop publishers will like the quality of the 8200's output.



Street price: \$4495
Maximum resolution: 1200 dpi
Rated engine speed: 16 ppm
Output quality rating: Excellent
PostScript: Included
Installed/maximum paper capacity: 350/850 sheets
Network news: Not intended for PC-based networks



Street price: \$4160
Maximum resolution: 800 dpi
Rated engine speed: 20 ppm
Output quality rating: Good
PostScript: Included
Installed/maximum paper capacity: 750/2250 sheets
Network news: Difficult and buggy setup; excellent communications utilities

Xerox 4520mp

This imposing tower of a printer is the fastest one at 300 dpi, where network printers earn their keep. An impressive 750-sheet standard paper capacity can be boosted to a staggering 2250 sheets, and its 50,000 page duty cycle is the group's highest. There's a unique 800-dpi mode, but the output was disappointing. Worse, the 4520mp couldn't print our Corel-Draw test page with the provided 8MB of RAM (upgradable to 52MB).

Network installation was strictly an affair for professionals: An undocumented network compatibility problem tripped us up. Once the 4520mp is running, however, the Windows status and print software keep you well informed.

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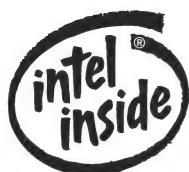
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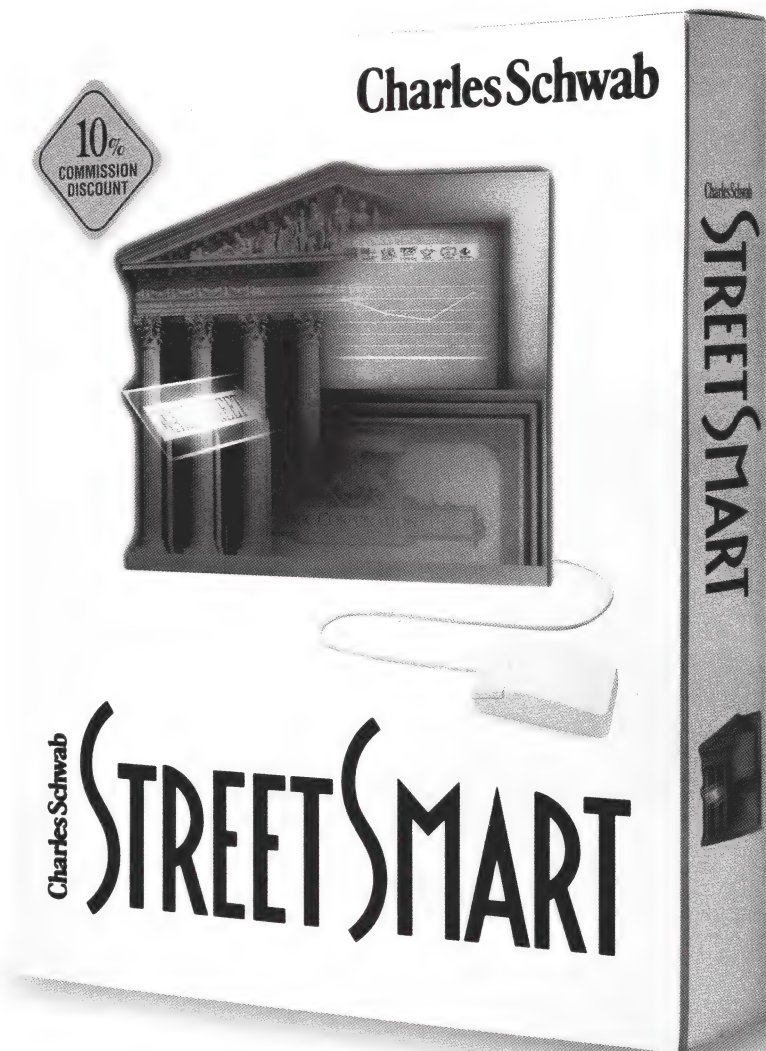
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Here's her advice.

By Naomi Wise

TAX SOFTWARE

Many Happy Returns?

TAXES ARE WHAT WE PAY FOR A CIVILIZED society, but those baffling Internal Revenue Service rules and schedules can make the process seem barbaric. Luckily, we can tame those terrifying tax forms with tax preparation software.

Some three million taxpayers will use personal tax software this year—most of them to generate fairly complex returns. The software holds your hand, translates the questions, calculates the figures, and gives expert advice as you go.

If you normally file the 1040EZ form, you need a pen, not a program. If salary and bank interest are your only income and you take the standard deduction, software will merely make your forms look neater. At the next level of complexity, though, programs make easy

work of such taxing issues as itemized deductions, capital gains and losses, child care costs, and simple self-employment situations. With even more tangled finances—active stock trading, rental properties, home offices with depreciable assets—many users produce preliminary returns with the software but bring them to accountants for finalizing.

The IRS smiles on software, which produces more legible forms and fewer math errors than handwritten returns. If there's any truth to an ugly rumor that the taxman targets returns produced by tax software for audit, it's because complex returns are, per se, audit bait. The IRS can't tell whether the forms were generated by an accountant using a professional program or by a home user with personal tax software.


We scrutinized the Windows versions of the four leading personal tax programs for the PC. Any flawed areas were retested in the DOS and CD-ROM-based Windows versions, if they existed (Simply Tax has neither), and we made sure to mention any outstanding features we found in the other versions as well. In all the versions, instead of filling out forms, you can consult context-related advice as you answer questions in an on-screen "interview." All programs also offer a forms-based approach for expert filers.

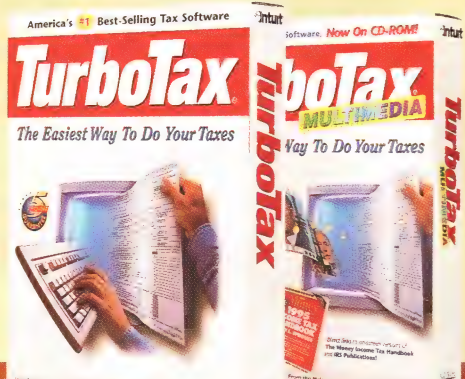
Each program can save you some time by importing unchanged fields from last year's PC-generated return (even, their makers claim, if the forms were created from rival packages) and by importing files from your personal finance software. Each offers a final audit, a deduction finder, and a what-if/ tax-planner feature that lets you try out alternative versions of your return. All can print a regular return.

Final versions of tax software packages, which are required to actually file a return, reach the shelves in late January. We reviewed preliminary editions issued last November, entering a complex, fictional tax scenario (see the sidebar "The Audit") into each program's Windows version and then having a tax accountant audit the returns. Although these so-called early birds are by definition incom-

BEST BUY

Intuit TurboTax


The major criteria for rating a Best Buy in a tax program are ease of use, quantity and clarity of tax help, and accuracy of results. TurboTax's preliminary edition proved nearly equal to its closest rival in agility, equal in help, and superior in accuracy. This year reliability became a factor, too; newer programs frantically morphed themselves to catch up, but market leader TurboTax made improvements without compromising its sturdiness and power. The best bargain of all is the CD-ROM—not for its clunky videos but for the 66 IRS publications that give you the goods straight from the horse's mouth.



plete, we were chagrined at the number of bugs we found in their beaks. Following a frenzy of content and format revisions (all cloning the new notebook-tab style of Windows 95), most preliminary releases were barely better than betas. Nevertheless, the programs revealed enough of their basic natures for us to choose a Best Buy.

4 Home Productions Simply Tax Early Bird Edition

Last year, Computer Associates International (CA) held out a carrot to customers by selling Simply Tax (upstart descendant of the late, unlamented EasyTax) for almost

nothing. This year's package—now sold under the moniker of CA's 4Home Productions division—underwent ambitious revisions. You pay for all the last-minute changes, though: The Early Bird had enough bugs to play a cartoon bunny.

Although Simply Tax resembles the other programs on the surface, its interface proved much harder to use, with repetitious questions, perverse defaults, and nasty navigation. Movement required either many mouse clicks or two- and three-keystroke commands (not just <Enter>). Nine-plus rodent-ridden hours of setting up our

THE AUDIT

Our scenario included not quite every complication in the book. Our fictional husband had unreimbursed employee travel expenses, as well as an employer set-aside fund for part of his child-care costs. We pushed the programs hard with the wife's self-employment issues, including a home office in an owned home and depreciation on the office portion. Assets included computer hardware and software

of varying ages and depreciation schedules; expenses required use of page 2 of Schedule C. We threw in cash and noncash charitable donations, bank interest, stock dividends, and capital gains. We also wanted the software to calculate (or advise us) how much the wife could contribute to a SEP-IRA (for the self-employed) versus a regular IRA.

While entering our tax scenario, we used all the help available for nearly every field. Whenever misleading questions or incorrect

advice seduced us into sin, we let ourselves succumb like virgin filers. We then had the returns audited by accountant Carolyn Tompkins of San Francisco's Peckler, Evans & Kolling.

Some Bumpy Flying...

Since we flew on the bumpy early birds, results were worse than they'd be using the final releases. The vital Vehicle and Child Care Worksheets were unavailable in TurboTax. Minor entries in Tax-Cut—and major ones in Simply-

admittedly complex tax scenario left us with a painful case of Mousemaid's Palm.

The interview is a grueling third degree. It detains you until you answer every question, even if it's inapplicable; then it forgets your responses. For instance, suppose your Schedule C shows you're self-employed: instead of automatically generating a Schedule SE, as other programs do, Simply Tax forgets your employment status and has to ask you again.

Aside from a brief Quickstart guide, there's no hard-copy manual for Simply Tax, which is unfortunate because the software help can be occasionally ungrammatical and frequently harebrained, as in, 'Your business miles plus commuter miles must equal the total number of miles the vehicle was driven'. (What about taking little Tiffany to her tuba teacher?) The hypertext tax advisor window (the Ernst & Young Tax-Savings Strategies Guide 1995) talks in tax lingo, while the IRS instructions window lacks a search feature and offers only terse forms instructions.

A very crude Pathfinder feature should be renamed Cryptmaster; it makes navigation a nightmare. Instead of taking you to the start of your subject, it lands you in the dark at the top of the gross topic area. If you forget to, say, enter an asset, you

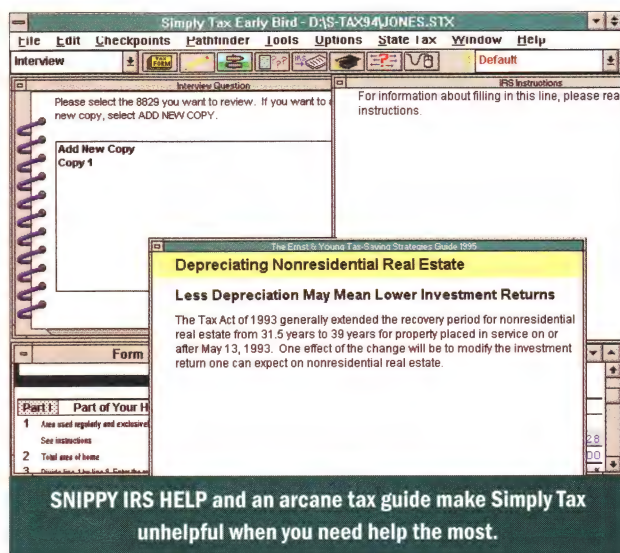
have to gnaw all the way through Schedule C once again (possibly making new errors) to reach the Depreciation Worksheet.

Crash-prone Simply Tax loads with auto-save defaulting to "off." The printout of our scenario included some 15 pages of zeroed-out, inappropriate forms. And the so-called automatic uninstall for this disk-space glutton is anything but: It just gives instructions on how to use Windows' Program Manager to do this job yourself.

Block Financial Software TaxCut HeadStart Edition

TaxCut's strength has always been in its ease of use, even for neophytes. Its faintly witty interview has a reassuring tone. And when the instructions are thin, you can open a hypertext help window for additional explanations.

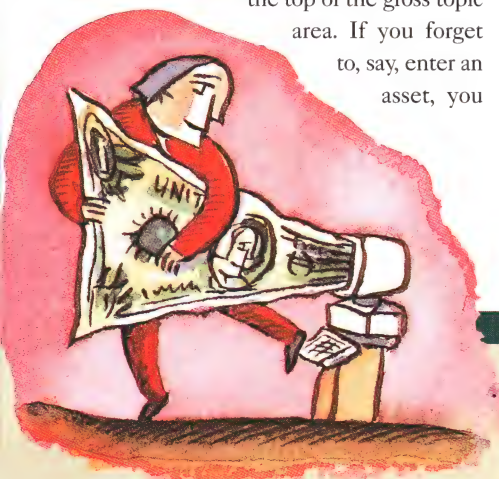
While all programs can import reports from personal finance programs like Quicken and Managing Your Money, TaxCut is unique in displaying both financial and tax programs simultaneously, so you can visually choose the data you want to transfer from one to the other. Navigation is a snap, too. A list of interview topics shows you where you are and lets you zip past irrelevant issues or back up to



make corrections. A unique Find Topic button lets you search alphabetically and then takes you to the interview question for the relevant form. The Windows version of TaxCut allows on-the-spot corrections when you run your completed return through its audit.

With TaxCut's flexible, toggle-operated Forms window, you can view the IRS form (to understand context and to double-check your entries), then jump to the form and make corrections without leaving the interview. When you're done, you can click a button to uninstall the program (leaving only the tax return on your disk). The slightly earwig-infested HeadStart Windows version on which we ran our scenario lacked many of these features, however.

Last year, H&R Block bought MECA Software, the maker of TaxCut. Now TaxCut users can get free phone support from



Tax—were entered faithfully, but mysteriously disappeared from the printout. SimplyTax also froze like a scared rabbit at home-office real estate depreciation.

All programs did fine with interest, dividends, and capital gains, and those that included a child-care expense worksheet correctly handled the employer set-aside. (For failures common to all pro-

grams, see the sidebar "Tax Software Tips and Gaps.") If Simply Tax hadn't blanked out our SEP-IRA entry, its oversimplified advice might have led to a massive excess contribution. Meals and entertainment deductions haven't yet been updated in Simply Tax (you can now claim only 50 percent, not 80 percent). Entries for estimated tax payments vanished, and auto license fees disappeared into the ozone. Prorated vehicle calcula-

tions came up incorrect, and all depreciation results were simply compost.

...And Wrong Turns

In TaxCut, either a sticky keyboard or the program itself produced an extra exemption for a phantom child with no name or birth date. The program merged estimated state tax payments with federal estimates, couldn't print page 2 (Other Expenses) of Schedule C, wouldn't let us amortize software, and gave us incorrect prorated

car deductions. And our SEP-IRA? There was no help for it.

TurboTax gave an incorrect depreciation percentage for our home-office real estate depreciation (the interview for this area could stand improvement), and it used the wrong "amount-life" for computer depreciation. The SEP-IRA field offered correct advice, but its premature placement in the interview led to an incorrect calculation. (For details on this problem, see "Tax Software Tips and Gaps.")

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Optional full sized tower pictured in addition to desktop.

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- Microsoft Mouse, 101-key keyboard
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Block (including free help in IRS audits)—if you don't mind a long phone-Muzak concert in high tax season. But Block also altered the program—eliminating the Forms window, the hypertext help window, and many of the basic instructions. With the HeadStart version's anorexic advice and Formless screen, we were flying blind and slow, and it took us 8 hours to complete a flawed return. Fortunately, a beta of the final version, which is due in January, revealed the return of these features.

The CD-ROM version of TaxCut stars TaxCut chief developer Dan Caine, tele-genic and relaxed in video clips that dispense a modicum of extra advice, but hardly enough to justify the new medium. You can zoom in by clicking a button; the larger image is blurrier, but the audio wavers on the smaller view.

Intuit TurboTax Headstart

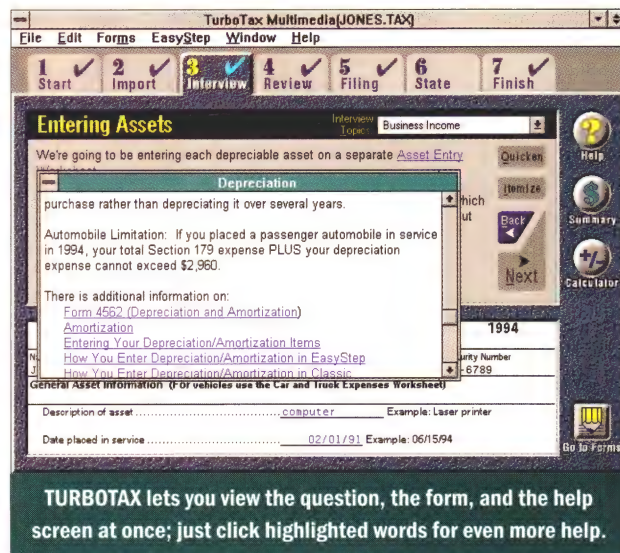
TurboTax is the earliest personal-tax software product that is still extant. Soberer in tone than TaxCut, it also appeals to slightly

more savvy computer users. Along with on-screen program help, a weighty, thorough manual lets you troubleshoot most glitches yourself; it's worth a look just to discover all the tools the program offers. And TurboTax doesn't neglect the DOS realm, even with its state income tax editions: You can get DOS versions for many states that the other programs shun. DOS users, therefore,

get nearly as muscular and eye-pleasing a package as Windows users do.

TurboTax's navigation is similar to TaxCut's, although to show the topic list, you have to click a button. During the wrap-up audit, you can make corrections on the spot.

The regular Windows version of TurboTax



TURBOTAX lets you view the question, the form, and the help screen at once; just click highlighted words for even more help.

hogs disk space, but this buys you a smart, clear, customized interview that remembers your answers and keeps dumb questions to a minimum. To get help, you click on highlighted words in an interview question or, for more depth, in the context-sensitive on-screen help. Some screens include answers

Tax Software Tips and Gaps

Tax laws are so complicated that even the best tax preparation software stumbles over them sometimes. Here are a few tax tips—and a number of software limitations—to keep in mind.

TIPS SOFTWARE The IRS won't let you write off your business software along with your paper clips. It calls software an "intangible asset" and wants it amortized in straight-line depreciation over three years; you must amortize tax software bought before August 10, 1993, over a whopping five years. But you can use a faster depreciation schedule (or a write-off) if you can prove the software will be outdated sooner.

Ironically, few tax programs have caught on to software's special tax status. The only early bird to get it right was TurboTax for DOS, so if you used a head-start

version of another package, you'll have to redo this area. If your program doesn't offer a category for software or intangible assets in the depreciation questions, choose *other* for type of asset and 3-year S/L (straight-line depreciation) for the schedule. The program may or may not take your orders; if it won't, then go to the form itself.

TELETAX The IRS offers prerecorded information on many topics. Call 800/829-4477 toll-free and enter 123 for a list of topics. To talk to a live tax adviser, call 800/829-1040.

DONATE OLD EQUIPMENT The National Christina Foundation furnishes disabled individuals with computers and programs that enable them to work; call 800/274-7846 for details. You can

take a tax deduction on the undepreciated value of your donation.

GAPS AUTOMOBILE LICENSE FEES When you enter your auto license fees as an employee or home-business deduction, all tax packages calculate the business percentage and deduct accordingly. However, when you get to Schedule A, few programs deduct the remaining (personal) portion of the license. Check line 8 of Schedule A in the form; if it's blank, you'll have to calculate the entry yourself.

AUTOMOBILE EXPENSES The mileage and parking expenses of regular commuting aren't deductible. As Block TaxCut's help explains, 'The IRS believes that the daily haul to work is a near-universal experience, and does not qualify for special treatment as an expense deduction'. You can, however, deduct automobile expenses directly linked to doing business

with a client. TaxCut and Simply Tax blur the distinction in their interviews, though, so don't let them mislead you.

HOME OFFICE/RENTAL UNIT DEPRECIATION If you have a home office or a rental unit in a home you own, you can deduct depreciation on that portion of the home. However, none of the programs warn that if you sell your partly depreciated home, you can be hit by a whopping tax bill on a phantom "profit." Another danger: When a region's home prices are falling, the IRS may calculate your mortgage interest deduction based on the current value of your house—not the value of your mortgage, which is based on the higher price you paid for the house. Claiming depreciation increases this risk.

HOME OFFICE DOUBLE-DIPPING DANGER You can deduct a portion of your mortgage interest

to commonly asked questions, which can make quick work of tough tax topics. There's also IRS help (although less than on the CD-ROM) that includes excerpts from IRS publications. The automatic uninstall takes several steps and a couple of minutes, but it's useful nevertheless.

This year TurboTax has finally included a Forms window, remedying the tunnel vision of previous releases. Its HeadStart had the fastest, smoothest flight: Entering our tax scenario took only 6 hours—not just because the interview is streamlined, but because questions and help are so explicit.

The CD-ROM version takes less disk space and gives more advice than does the regular Windows version. Loading slowly, it provides funky video, acceptable sound, and fine content. In small video boxes, Mary L. (Money) Sprouse and Marshall (Fortune) Loeb proffer lightweight advice.

Along with TurboTax's own in-depth help, though, you can peruse Sprouse's lucid *The Money Income Tax Handbook*. Better yet, the IRS help includes not just forms-related

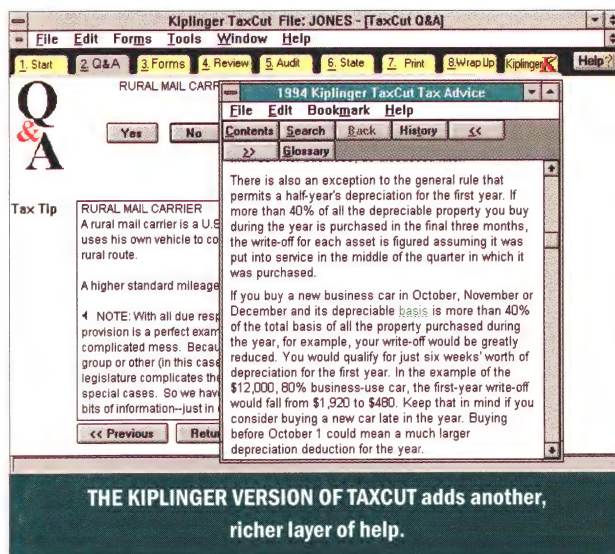
instructions but 66 astonishingly readable IRS publications, which you access alphabetically by topic.

Kiplinger TaxCut HeadStart Edition

The Kiplinger financial information empire sells this alternative version of TaxCut, layering the help of Kiplinger TaxCut Tax Advice on top of that already provided. To get more help from the help, you can click highlighted words or use the Search function; a useful Glossary clarifies financial terminology. We didn't run our test scenario on this program's HeadStart edition because the software is the same as Block's, but the Kiplinger enhanced help would

probably have increased our speed and accuracy.

The Kiplinger CD-ROM features talking heads of Kiplinger tax mavens, interspersed with scenes of regular humans (with the experts' voice-overs). The videos are interesting but scarcely vital to properly prepar-



and property taxes for an in-home business on Schedule C, where it will do you the most good. However, all the packages let you "dou-

Tax and TaxCut, you can click a button to see how calculated amounts are carried between related forms (from, say, Form 8829 to Schedule C), and to check whether the program carried your prorated car license fee and home-office mortgage deductions to Schedule A.

MARITAL SEPARATION

Neither the IRS nor tax software writers have faced up to the issue of marital collapse. If you're childless and your spouse runs away with a rock star, tax programs won't give adequate advice on your new filing status. Usually you'll fall into the punitive 'Married Filing Separately' category: If one spouse itemizes, the other must itemize, too. But what if you don't even know your ex-to-be's whereabouts? Block TaxCut offers

free consultations with H&R Block, but we stumped the Block representative with this question. If you've been dumped, don't get software, get an accountant—and a lawyer.

SEP-IRA A Simplified Employee Pension—Individual Retirement Account can allow a prosperous, self-employed taxpayer a larger pension deduction than does a regular IRA. The formula: Take your net self-employment income (the bottom line on Schedule C) and subtract half your Self-Employment Tax (the bottom line on Schedule SE). Multiply this figure by .13045. That's the amount that you can contribute.

The programs ask, 'How much have you contributed to a SEP-IRA?' But none actually calculate your maximum allowable contribution. Worse, the tax form asks the question too soon. Calculate a SEP-IRA when your return includes both a complete Schedule C and a

complete Schedule SE, and then go back and enter the bottom-line figures in the SEP-IRA area. (If you can't find 'SEP-IRA', look for 'Keogh'.) Make sure that the program recalculates your return and that you make the contribution by the return's due date (which is April 17 this year).

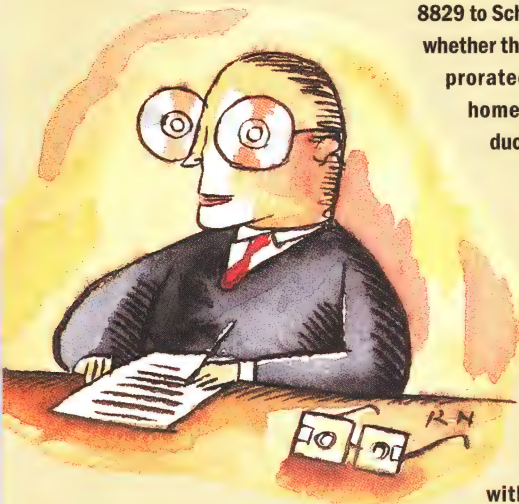
STATE TAX FORMS Here's a rundown on which of the programs that we reviewed cover which state tax forms.

All programs offer state forms for AZ, CA, CN, CO, DC, FL (for TurboTax, in DOS version only), GA, IL, IN, MA, MD, MI, MN, NJ, NY, OH, PA, VA, and WI.

All except Simply Tax offer state forms for MO, NC, OR, and TN.

Simply Tax and TurboTax editions offer state forms for OK.

TurboTax editions offer state forms for all other states with state income tax, but only in the DOS version for AK, DE, HI, IA, ID, KS, KY, MS, MT, NH, RI, and SC.



ble dip," with no automatic link from Form 8829 (home business deductions) to Schedule A (home interest and tax deduction). So remember to subtract from your Schedule A deductions the amount that you have already claimed on Schedule C. In Turbo-

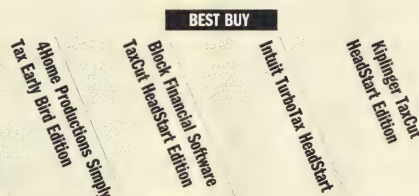
programs won't give adequate advice on your new filing status. Usually you'll fall into the punitive 'Married Filing Separately' category: If one spouse itemizes, the other must itemize, too. But what if you don't even know your ex-to-be's whereabouts? Block TaxCut offers

FEATURES COMPARISON

TurboTax Wins for Accuracy and Help

- Yes
○ No

n/a = not available



Standard features

Street price ¹	\$38	\$10	\$35	\$12
Upgrade price to final version ¹	free	\$40	free	\$40 ²
CD-ROM street price, early/final	n/a	\$10/\$40	\$45/\$45	n/a/\$40 ³
DOS version available	○	●	●	●
Number of state modules available (Windows/DOS versions)	20/n/a	23/23	28/45	23/23
Price of state tax module	\$25	\$30 ³	\$25	\$25 ³
Number of forms, schedules, and worksheets supported	110	100	104	95
Disk space/RAM required for Windows version (MB) ⁴	10/4	8/4	16/4	8/4

Tax help

Interview format	●	●	●	●
Customizes interview based on user entries	○	○	●	○
Context-sensitive adviser	●	●	●	●
Context-sensitive IRS instructions	● ⁵	● ⁶	● ⁶	●
Additional tax help	●	○	○	●
Tax planner	●	●	●	●
What-if analysis	●	●	●	●
Audit detector	●	●	●	●

Preparation tools

Calculation override	● ³	●	● ³	●
Automatic recalc after interview entry	●	●	●	●
Information link between forms	●	●	●	●
Pop-up calculator	● ³	●	●	●
Graphs sources of income	●	●	●	●

Ease of use

On-screen forms	●	● ³	●	● ³
Online tutorial	●	●	●	●
Data import feature ⁷	●	●	●	●
Automatic uninstall option	○	●	○	●
One-keystroke navigation available	○	●	●	●
Option to omit irrelevant topics	○	●	●	●
"Find topic" feature	● ⁸	●	●	●

Output

Prints fileable IRS forms	● ³	● ³	● ³	● ³
Fee for electronic filing	\$14.95	\$14.95	\$14.95	\$14.95

Support

Toll-free phone support	○	○	●	○
Weekend support	●	●	●	●
Fax/BBS	●/●	●/●	●/●	●/●

Contact information

Vendor phone number	800/773-5445	203/255-1441	800/964-1040	800/235-4060
Reader service no.	733	734	—	736

¹ All prices are vendor estimates.

² The HeadStart version is an extra-cost option if the final version has not yet shipped.

³ Final version only.

⁴ DOS versions require less disk space and RAM; CD-ROM requires less disk space but may require more RAM.

⁵ Forms instructions only.

⁶ CD-ROM and final versions only.

⁷ Not fully available in early editions.

⁸ Jump to gross topic only.

For more information about all products in this table, circle reader service no. 908.

ing your tax return. Sound quality varies from wretched to acceptable; the images are big and fuzzy and sometimes overlap.

The Bottom Line

Our audit results indicate these programs can handle moderately complicated tax scenarios. Truly hairy returns (especially those involving home-office deductions) are chancy without a review by a live accountant. However, they can be useful for organizing data and finding deductions that your accountant might overlook.

Remember that the final versions of these programs should be on the shelves as you read this. Our evaluation of the early birds is intended to help you select a program in its final form—the early versions were otherwise mostly a waste of time and money.

Two-year-old Simply Tax, although improved from last year, is still not ready for prime time. Early Bird buyers paid to be beta-testers, and it's doubtful that all the bugs can be exterminated by tax time. In any case, Simply Tax's clumsy design makes tax preparation painful and torturous.

Even if you're a tax novice, Block TaxCut is easy and almost fun to use, with its brilliant layout, nimble navigation, ease of importing, and helpful interview—not to mention the free H&R Block phone advice.

Kiplinger TaxCut adds a rich layer of help to the vanilla Block version. This can be an excellent choice for a complex return: The enhanced help, overlaying so lively a program, should qualify Kiplinger to rate or tie for a Best Buy. However, TaxCut by either name had a poor HeadStart. We had only a beta and a promise about the final release—and big changes in a short time can breed new bugs. If it all works out, Kiplinger should be a superb program—but a Best Buy can't come with a caveat emptor.

Our audit found TurboTax the most accurate in handling our highly complex return. Its turbocharged interview just flows, with well-worded questions, helpful help, and easy navigation. With this year's new Forms window, users can finally double-check their entries as they go, and the detailed manual is another power tool. This sophisticated program had the only semitame early bird in the flock.

This is San Francisco freelance writer Naomi Wise's third annual article on tax software for PC World.



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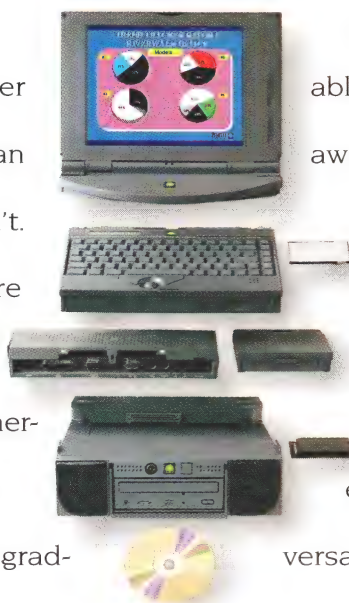
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Slick Tricks

FROM THE WORD PROCESSING PROS



You've been using your word processor for years now, so why bother with more tips? Glad you asked. Here are the top ten reasons:

- 10 You know there must be an easier way.
- 9 You think OLE is something you shout at a bullfight.
- 8 You upgraded last year but still haven't discovered the latest features.
- 7 The Word guru in the next cubicle just got transferred.
- 6 You're still using the default toolbar that came with your word processor.
- 5 You'd like to print text in something other than 10-point Times Roman.
- 4 Three words: WordPerfect for Windows.
- 3 You wonder what those funny picture boxes at the top of the screen do.
- 2 It's easier than reading the manual.
- 1 You're tired of reading articles about Windows 95.



Convinced? Then read on. These 80 ultra-useful tips and tricks will supercharge Microsoft's Word 6.0 for Windows, Lotus's Ami Pro 3.x, and Novell's WordPerfect 6.x for Windows. So dig in: As you're about to discover, there really is an easier way.


Microsoft Word 6.0

Close 'em All If you've got a bunch of open documents, don't bother closing each one before you leave Word. When you exit Word (with <Alt>-<F4> or File•Exit or by double-clicking the control box) without closing your unsaved open files, the application will ask you whether you want to save your changes to each of these unsaved files in turn. But if you merely want to close all your documents without exiting Word, hold down <Shift> and, with your mouse, select *File*; the Close option on the File menu will change to Close All. Once again, a dialog box will prompt you to save your changed documents.

The Last (File) Shall Be First Want to resume work on the last file you opened when you start your next Word session? Here's a one-line macro that will do the trick. Select *Tools*•*Macro*, type the name **Autoexec** in the Macro Name field, and click *Create*. Be-

tween the lines Sub MAIN and End Sub, enter the line **filelist 1**, then press <Ctrl>-W to save the macro. The next time you start up WinWord, the most recently opened file will load automatically.

Natural Selection You've got a zillion options for selecting text in Word 6.0: Hold down the <Shift> key and move the cursor, hold down <Shift> and <Ctrl> and move the cursor, hold down <Shift> and click with the mouse—the list seems endless. Maybe that's why so few users get around to learning about the Extend Selection mode, which is too bad, because it's one of Word's handiest features. Let's say you've used the mouse to select a text block, only to realize you want to shorten it or include some more. Instead of making the selection again from scratch, you can keep your hand on the mouse and double-click *EXT* on the status bar at the bottom of the screen. You'll then be able to click elsewhere in the text to extend or shorten your selection. Double-click *EXT* again to exit Extend Selection mode.

Table Scraps Specifying the number of rows and columns you want in a new table is easy: Just click the *Insert Table* icon, hold down the mouse button, and drag the  pointer to the right and down until the desired number of rows and columns is indicated. (If you don't have this icon showing, you

Edited by Steve Fox and Dan Miller

can also select *Table*•*Insert Table*, set the number of columns and rows, and click *OK*.) But what if you want to add rows or columns to an existing table?

To add a row above an existing row, click anywhere in that row, then click the *Insert Table* icon. Or, right-click the row and select *Insert Rows*. To add a row to the end of a table, place your cursor anywhere in the bottom right cell and press <Tab>. What if you want to add more than one row? To add two, for instance, select two rows in the ta-

ble (move the mouse pointer into the left margin so the arrow flips to the right, then drag to select the rows), and follow the same row-insertion steps just described.

Inserting columns in a table is just as easy: Select as many columns as you plan to add. (Move the pointer just above the leftmost column to be selected; when the pointer becomes a downward arrow, drag to select the columns.) Click the *Insert Table* icon or right-click the selected columns, then select *Insert Columns*. To delete selected rows or columns, you can right-click them or select *Table*, then select *Delete Rows/Columns*.

Seize the Space Let's say you receive a document from a coworker in which each line of text is preceded by several spaces. How do you get rid of the spaces without embarking on a tedious search-and-replace? In Word 2.x,

The Well-Styled Table Do you have a table sized just right and want to save a copy of it for later use? First, save your current document, then delete from the table any text that you don't want to repeat. Next, select the table by clicking it and pressing **<Alt>-<NumPad 5>**. Choose *Edit•AutoText*, enter a name like **MYTABLE**, and click *Add*. Then close the document *without* saving these changes. To insert the table elsewhere, simply type the table name and press **<F3>**.

Honey, I Shrunk the Page Instead of fussing with margins, fonts, and page settings to squeeze that one-and-a-quarter-page document onto one page, let Word do the work for you. Select *File•Print Preview*, and click the *Shrink to Fit* button. Word will

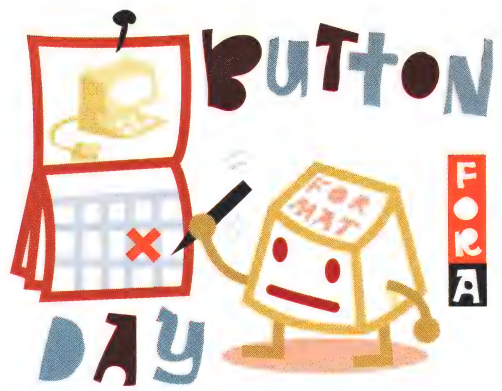
make all the necessary tweaks to fit your document onto a single page. On longer documents, Word will reduce the page count as much as it deems prudent.

Character Builders Word has keyboard shortcuts for many special characters—**<Alt>-<Ctrl>-C** produces ©, for example. For a list of these shortcuts, select *Insert•Symbol*, then the *Special Characters* tab. Note that these keyboard shortcuts won't produce the expected symbol in some fonts. You can also insert a special character by selecting the *Symbols* tab,

choosing the character, then selecting the *Insert* button (not the **<Insert>** key).

Changing of the Case Don't retype when you want to change case. Select the text you want to change, hold down **<Shift>**, and press **<F3>**. If your selected text started out all capitals, the first **<F3>** press will change it to all lower-case; the second time, Word will capitalize just the first letter of each selected word.

One More Time To repeat your most recent action, try pressing **<F4>**, **<Alt>-<Enter>**, or **<Ctrl>-Y**. Undo that same action with **<Ctrl>-Z** or **<Alt>-<Backspace>**. And if you're still vacillating, **<Alt>-<Shift>-<Backspace>** will redo any action that was just undone.



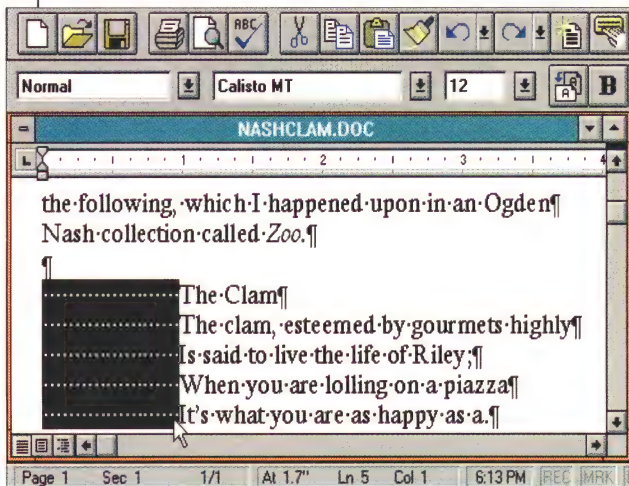
Button for a Day Do you plan to repeat an operation during a particular editing session—applying styles, say—and want the icon for that function close at hand? Select *Tools•Customize•Toolbars*, and in the Categories field, select the category containing your desired tool (*Format*, for instance, for the Style icon). Click the icon you want, and drag it onto your document window. You can now use it just as you would any icon on the toolbar. When you're done, get rid of it by clicking the Control box in its upper-left corner.

File Open en Masse To open multiple files in Word, select *File•Open* and, while holding down **<Ctrl>**, click the files you want. Click *OK*, and Word will launch them all.

Double-Timing Dialogs Word 2.0 for Windows users may not realize that with Word 6.0, you can make changes in text on screen without closing the spelling checker dialog box. If necessary, move the dialog box out of the way, make your changes, and continue your search. This also works with *Edit•Find*, *Edit•Replace*, and *Insert•Symbols*, but oddly, not with the thesaurus.

Do-It-Yourself Redundancy Check "Information superhighway" is an acceptable turn of phrase, but not if you use it in every other sentence. If you have a pet term you use too often, try this: Select *Edit•Replace* and enter the word or words in question in both the Find What and Replace With fields. Then click *Replace All*. Word will tell you the number of replacements it made—which equals the number of times the redundant phrase appears in the text.

Don't Go to Go To Bookmarks provide an easy way to mark your place in text. Position the cursor, select *Edit•Bookmark* or press **<Ctrl>-<Shift>-<F5>**, type a bookmark name, and press **<Enter>**. But resist the temptation to use *Edit•Go To•Bookmark* to find your mark.



EVER RECEIVED A DOCUMENT WITH EXTRA SPACES on the left? Lose 'em. Hold down <Alt>, select the offending spaces with the mouse, then press <Delete>.

you could select a vertical section of text by holding down the right mouse button and dragging. But in Word 6.0, the right button calls up context-sensitive commands. If you want to select a column, you now have to hold **<Alt>** while you left-click and drag. To get rid of the selected column, press **<Delete>**.

More Files, Please If you'd like Word to display a longer list of recently accessed files under the File menu, select *Tools•Options*, click the *General* tab, and insert a number between 1 and 9 in the Recently Used File List box. If you enter a 9, Word will display a listing of the last nine files you've opened instead of the default four. One click on any file name in the list will open that file.

Try **<Ctrl>-<Shift>-<F5>** or *Edit•Bookmark* instead; each plunges you directly into the Bookmark dialog box without a detour through the Go To box.

Word Downgrade Equals Hardware Upgrade Is your PC struggling under the heavy hardware demands of Word 6.0? Maybe the best thing to do is to start from scratch. From Word's Setup program, select *Remove All* to uninstall the program, then reinstall it selecting the Laptop option, a minimal but functional 5MB configuration.

Buried Treasure at the Border Tucked away on the right side of the Formatting toolbar there's a *Borders* icon. Click it, and you'll bring up an additional toolbar with handy icons for instantly applying borders and shading. To hide the Borders toolbar, just click the icon again.

Faster Printing If Word is printing at a snail's pace, here are a few suggestions to speed the process, especially for draft versions:

- Select *Tools•Options•Print* and make sure *Draft Output* is checked and *Background Printing* is not.
- Select *Tools•Options•View* and check *Picture Placeholders*.
- Make sure your AUTOEXEC.BAT

includes a SET TEMP statement that points to a valid directory with at least 8MB of free disk space.

- Use your printer's built-in fonts. To identify them, click the font drop-down menu on the toolbar. Printer fonts—Courier and Helvetica are common—are shown to the right of a printer icon. (Careful, though: Word also marks Adobe Type 1 fonts with that same icon.)

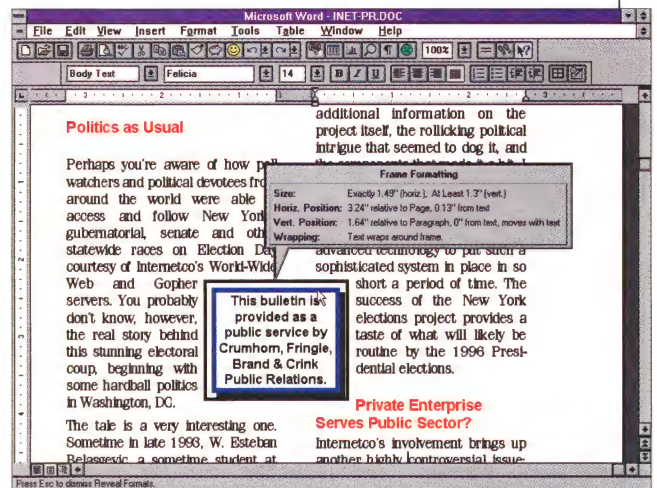
AutoFormat Spots the Headings

AutoFormat takes plain, unadorned text and pretties it up with font styling, paragraph formatting, and other visual embellishments—without your doing anything more than accepting or rejecting its recommendations. But even if you don't trust software to make design decisions for you, AutoFormat can be a godsend if you're working on a long document in which the different text elements—headings, titles, body text, and such—aren't tagged with distinguishing styles. Just select *Format•AutoFormat*, and

Word will zip through the document, identifying headings and footnotes here, body text and captions there, and styling them appropriately. Even if you later choose to reject its design decisions, Word will have saved you the trouble of identifying these various elements.

Text Wraparounds To get text to wrap around an image, select *Insert•Picture*, choose the image you want, and click *OK*. Click the picture once to select it and drag its sizing handles to resize it, then drag it to the desired location. Click the picture once to make sure it's selected, and choose *Insert•Frame*. If you're asked whether you want to switch to page layout view, click *Yes*, and the text will flow around the frame. Select the picture once again, and drag it to fine-tune its positioning.

Revealing All WordPerfect users know and love the Reveal Codes feature, which shows hidden formatting. Word's version is lesser-known, but it does exist. Click the *Help* button (or press **<Shift>-<F1>**) and click any text to get the lowdown on its para-



IF IT'S GOOD ENOUGH FOR WORDPERFECT, it's good enough for Word. Word now has a clone of WordPerfect's Reveal Codes feature, which identifies formatting of any element on a page.

graph and font formats as well as any character styles. Press **<Esc>** or **<Shift>-<F1>**, or click the *Help* button again to turn this feature off.

Cream of the Crop Have you ever inserted a piece of clip art (*Insert•Picture*) and then decided you wanted to use only part of it? Don't resize it, crop it. Click the picture to select it, hold down **<Shift>**, grab a sizing handle, and drag to crop out any part of the image you don't want. If you then want to resize the cropped image, release **<Shift>** and drag the sizing handles as usual.

<Shift>-<F5> Marks the Spot Especially when working on long documents, you often want to return to the place you were working at the end of your last editing session. Just open the document and press **<Shift>-<F5>**, and your cursor will jump to wherever it was when you last saved the document.

The Pane of Separation If you've ever tried to drag and drop text to a destination a screen or two away, you've almost certainly overshot your mark as the screen whizzed by. The solution: Split your window into two independently scrolling panes so you can see both the drag-from and the drop-to points on screen at once. To do so, move the mouse pointer to the heavy black split bar just above

15 Universal Keystrokes

Whichever of these word processors you use, there are several keystrokes you should know to make your work easier. They work in Ami Pro, Microsoft Word for Windows, and WordPerfect for Windows.

<Ctrl>-B	Boldface toggle
<Ctrl>-C	Copy
<Ctrl>-E	Center align
<Ctrl>-G	Go to
<Ctrl>-I	Italics toggle
<Ctrl>-J	Full justification
<Ctrl>-L	Left align
<Ctrl>-O	Open
<Ctrl>-P	Print
<Ctrl>-R	Right align
<Ctrl>-S	Save (for new documents, Save as)
<Ctrl>-U	Underline toggle
<Ctrl>-V	Paste
<Ctrl>-X	Cut
<Ctrl>-Z	Undo

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the vertical scroll bar (the pointer will change into a two-sided arrow). Then click and drag the split bar (or just double-click it) to form two panes, and scroll each pane until you can see both the text you want to relocate and its destination point. When you're done dragging and dropping the text in question, you can remove the pane by double-clicking the split bar, dragging it all the way up or down, or selecting *Window • Remove Split*.

Undock Your Toolbar Would you rather have your toolbar at the bottom of the screen or on the right-hand side? Click any toolbar at a spot where there's no button, and drag the whole bar. Once it's undocked, you can grab its border and reshape it more to your liking. And if you change your mind, just double-click the bar where there's no button to return it to its original location.

Marginal Text You know those impressive-looking business letters with a list of names (usually a board of directors or something similar) in small type running down the left margin? You can get the same effect in Word by using frames. Select *Insert • Frame* and click *Yes* to switch to page layout view. Now draw a frame down the left margin and type text into it. If you don't want the frame to be visible when you print, highlight it, select *Format • Borders and Shading • Borders*, and click *None* under the Presets heading. For a sharp finishing touch, select the text and click the *Align Right* button on the formatting toolbar. One warning: Your frame may extend into a nonprintable area. Check *File • Print Preview* to verify that all your text is printable. If it's not, make the frame narrower, or move it and the left margin of the entire document a bit to the right.

Ami Pro 3

Location, Location, Location Want more real estate on your screen? If you can live (temporarily, at least) without the Ami Pro title bar, menus, SmartIcons, status bar, and scroll bars, select *View • Show Clean Screen*. You'll get a nice, clean view of your document. If you want to pick and choose which on-screen elements will disappear, select *View • View Preferences*, click *Clean Screen Options*, and make your selections. To get everything back to normal, click the *Return* icon in the lower right corner of the screen. If you don't see this icon, press <Alt>, then V, and then select *View Preferences • Clean Screen Options • Return icon • OK • OK*.

The Path More Taken By default, when you select *File • Open*, Ami Pro shows you files in

15 Top Word Processing Downloads

Some of the best tools for word processing don't come with your word processor: They're available online. The following 15 macros and shareware packages are the most popular downloads from CompuServe's user forums for Word for Windows (GO MSWORD), Ami Pro (GO LOTUSWP), and WordPerfect for Windows (GO WPUSERS). For your downloading convenience, we've collected and posted them on PC World Online.

Word for Windows

Send WinFax Adds a Send WinFax option to the File menu or toolbar—select it to send the active Word document as a fax.

Price: **free**. Online file name: **SNDFAX.ZIP**

MergeFax One more WinWord/WinFax add-on, this one lets you mail merge faxes to multiple recipients.

Price: **\$55**. Online file name: **MRGFAX.EXE**

FileDelete Adds Delete to the File menu.

Price: **free**. Online file name: **WDEL.ZIP**

WOPR AKA Woody's Office Power Pack, a collection of Word utilities including Enveloper, File Manager, 2x4, FileNew, Toolbar Editor, Stellar Spellar, Winbreak Lite, TSS Address Book Lite, and more.

Price: **\$49.95**. Online file name: **WOPR60.ZIP**

MegaWord Another hefty add-on bundle, this one has nearly 40 macros including 3-D Tables, Character Styles, Fast Formatting, Pop-up Calendars, a Personal Information

Manager, Tool Bar Manager, Task Manager, and System Watchdog. MegaWord also includes a collection of 250 WordBasic sub-routines and functions.

Price: **\$49.95**. Online file name: **MW601.ZIP**

Ami Pro

AmiDialer. A macro to dial phone numbers from documents. Also stores names and numbers. Supports COM 1 through 4, and speeds up to 19,200 bps.

Price: **free**. Online file name: **DIALER.ZIP**

WINFX2.ZIP Macro that lets you switch to the WinFax Pro driver without going through Printer Setup.

Price: **free**. Online file name: **WINFX2.ZIP**

ALLMA.ZIP Toolbars to enhance existing SmartIcon sets, letting you access 99 Ami Pro functions.

Price: **free**. Online file name: **ALLMA.ZIP**

SIGNIT.ZIP Macro to automate importing signatures into documents. Works with any

graphic format Ami Pro can import.

Price: **free**. Online file name: **SIGNIT.ZIP**

DSK_LB.ZIP Macro that prints floppy disk directory labels; works with laser and color printers with Avery labels.

Price: **free**. Online file name: **DSK_LB.ZIP**

WordPerfect for Windows

WINFAX.ZIP A macro that allows you to fax a document without manually changing the printer setup. Works with WordPerfect for Windows 6.0 and WinFax Pro.

Price: **free**. Online file name: **WINFAX.ZIP**

FAXWIN Macro that automates the creation of fax cover sheets; automatically inserts addressee's name and company.

Price: **free**. Online file name: **FAXWIN.ZIP**

Access Macro containing a pop-up menu that affords you quick access to the DOS prompt, Windows Calculator, Cardfile, and Calendar.

Price: **free**. Online file name: **ACCESS.WCM**

TYPOS and QCADD A list of 400 common typographical errors and a macro that adds them to your QuickCorrect list.

Price: **free**. Online file names: **TYPO.ZIP** and **QCADD.ZIP**

the directory `c:\amipro\docs`. But few users actually use this directory. To change the default document directory, you've got two choices. One option is to select **Tools • User Setup • Paths** and enter the directory of your choice in the Document box. The second option allows for greater flexibility. Follow the same trail to the Default Paths dialog box as above, but then check *Use working directory*. Now, when you choose **File • Open** (or **File • Save** for a new document), Ami Pro will go to the last directory from which you retrieved a file or to which you saved one. If you choose a different directory, it then becomes the new default.

Simple Pleasures If you find Ami Pro menus too long, there's a built-in macro to temporarily shorten them. Select **Tools • Macros • Playback**, then double-click *menulite.smm* in the Macros list. You should now find a new item, *Short Menus*, at the end of the View menu. Select it, and the number of menu items will shrink to a manageable few. You can revert to the original state of affairs by selecting **View • Long Menus**.

As You Like It Ami Pro ships with a bunch of built-in macros, but the most useful could be one called *_AUTORUN.SMM*. It lets you select macros you want to run every time you start Ami Pro.

To add macros to the autorun list, select **Tools • Macros • Playback** and double-click *_autorun.smm* in the Macros list. A dialog box titled *Autorun Macros* will appear. Search the list for the macros you want to run; as you find each one, select it, then click *Install*. When you're done, click *OK*. From now on, those macros will run whenever you start Ami Pro. If you later decide you don't need to run one of these macros, you can open the *Autorun Macros* dialog box again, select the macro you want to get rid of, and click *Remove*.

Floating Footers Want to put one footer, such as "Continued," at the bottom of every page but the last, and another, such as "End," on just the last page? The key is to use floating footers.

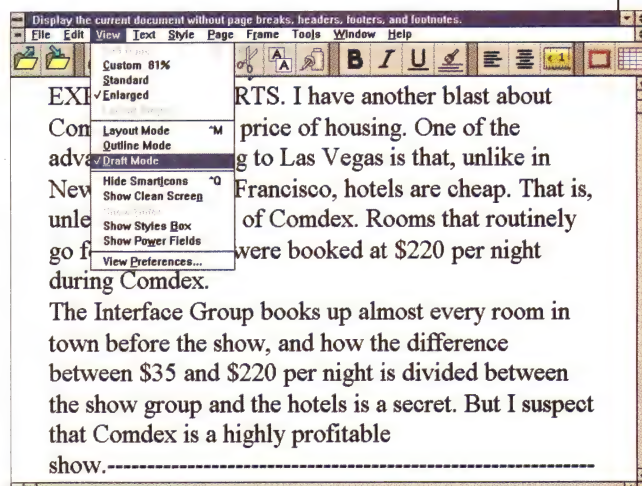
First be sure you're in layout mode; if not, select **View • Layout Mode**. To insert the first footer, click anywhere in the bottom mar-

gin of the first page and type the text of your footer—in this case, **Continued**. To insert the second footer on the last page, position the cursor anywhere on the first line of that page and select **Page • Header/Footer • Floating Header/Footer**. Choose *Insert* and *Floating footer*, then click *OK*. Ami Pro will move the cursor to the bottom of the current page. Type the new footer text, in this case, **End**. Your floating footer will supersede the original footer on this and any subsequent pages.

Unfortunately, getting rid of floating footers is a bit harder than adding them. First you'll have to select **View • View Preferences**, check *Marks*, and then click *OK*. Move the cursor to the beginning of the document by pressing **<Ctrl>-<Home>**. Then open the *Go To* dialog box by selecting **Edit • Go To**, pressing **<Ctrl>-G**, or clicking the page number at the right end of the status bar. Click *Next Item* and select *Floating Header/Footer Mark* in the scroll box. Then click the *Go To ^H* button, select **Page • Header/Footer • Floating Header/Footer • Remove**, make sure that *Floating Footer* is checked, and select *OK*.

Lock It Up Let's say you've created a document and want others to review it. They could make changes and comments on the original document and then send it back to you, but then you'd have to compare the "before" and "after" versions (using Ami

Pro's **Tools • Doc Compare** feature). There's a way to get around this comparison step: Select **File • Doc Info** and check *Lock revision marking on*. Thereafter, whenever that file is retrieved, Ami Pro will open with revision marking turned on. The only way others can turn off revision marking is by unchecking the 'Lock revision marking on' box, so don't share this tip with them.



LOOKING LARGE. Ami's *Enlarged* and *Draft* modes give you the up-close-and-personal view of your text, without those messy fonts and graphics getting in the way.

A Brief Farewell to WYSIWYG If you want a better look at your text (see figure above), you can select **View • Enlarged** to zoom in at 200 percent. But while doing so makes your document more legible, it also causes the screen to scroll back and forth as you type. If you can temporarily live without Ami Pro's default WYSIWYG mode while you enter text, choose **View • Enlarged** and then **View • Draft Mode**. Your text will not only be more readable, but lines will also wrap on your screen.

Moving to the Center While centering text horizontally is easy in Ami Pro (just click the *Center Text* button), centering text vertically is another story. After you've entered the text to be centered and moved the cursor so it's just after the last character of the text, you then must select **Page • Breaks** and check both *Insert Page Break* and *Vertically Center Text Above Page Break*.

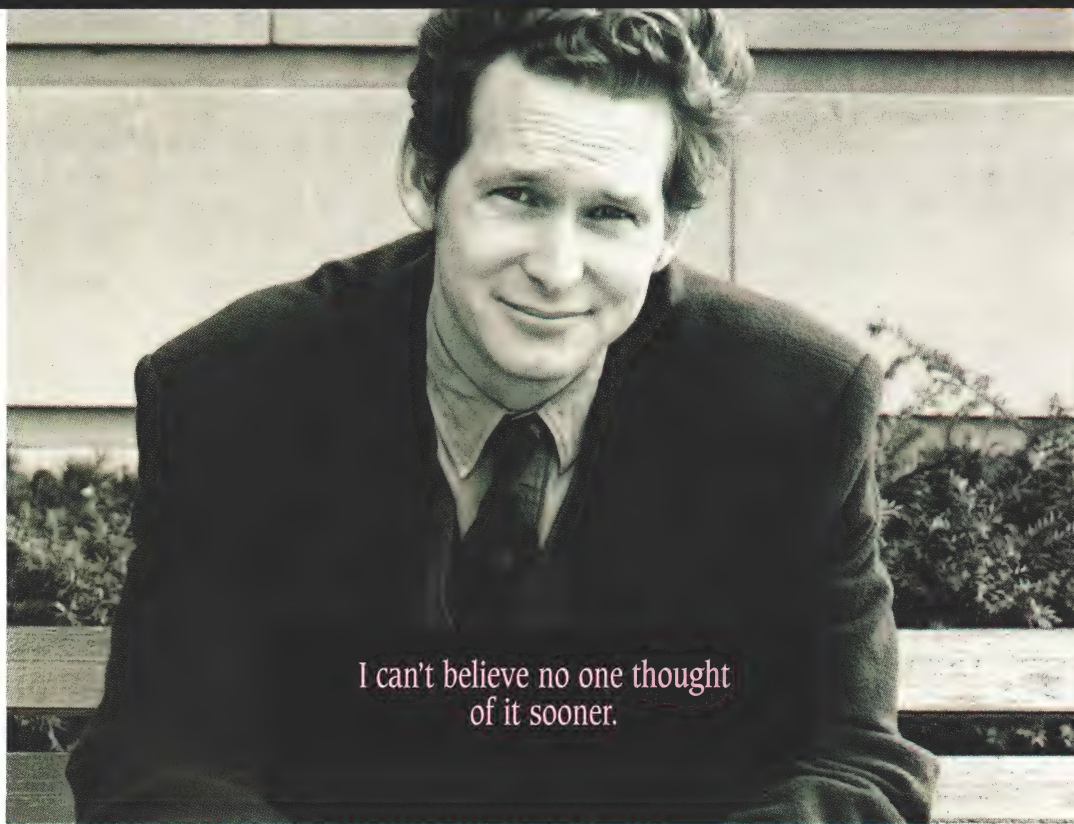
Mobile Icons Just because Ami Pro puts its *SmartIcons* at the top of the screen to start with doesn't mean you need to keep them there. To put them where you want them, select **Tools • SmartIcons**, then open the *Posi-*





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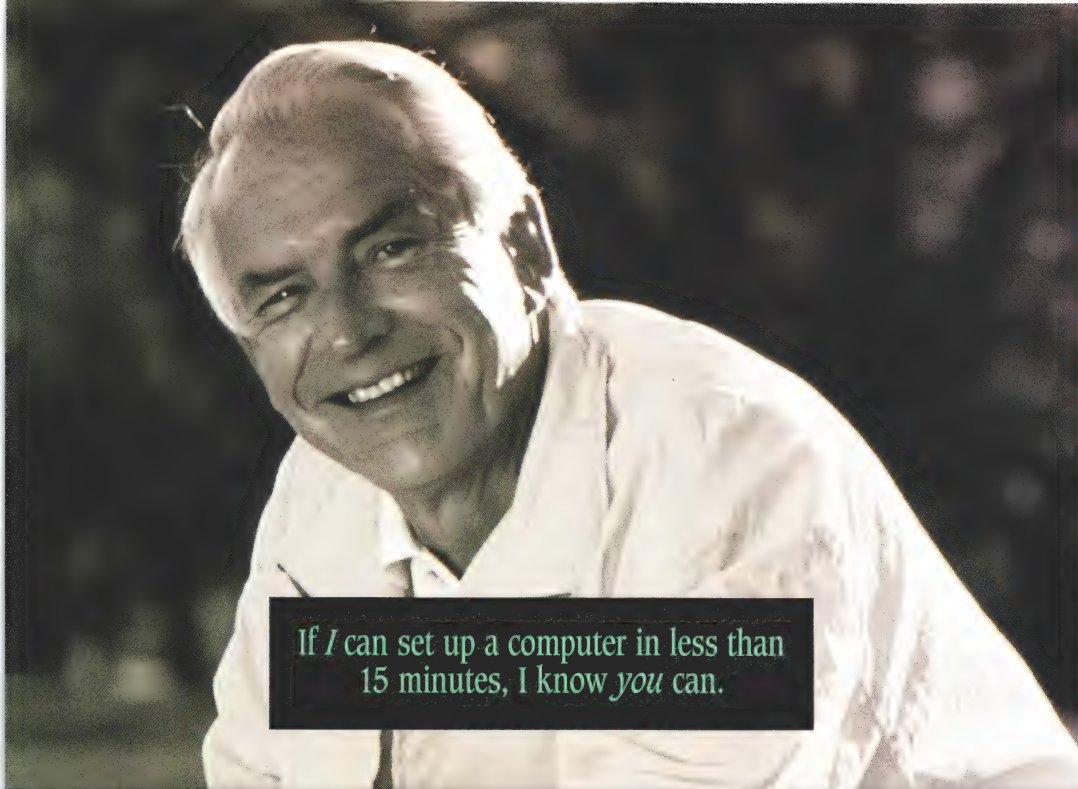


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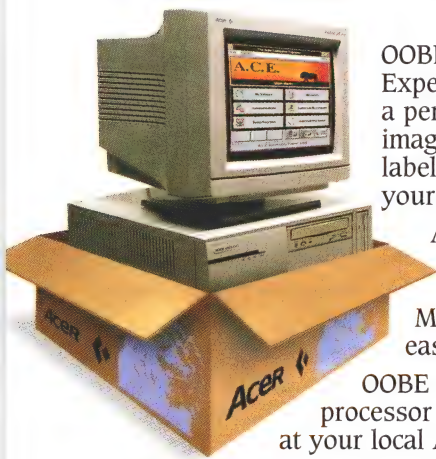
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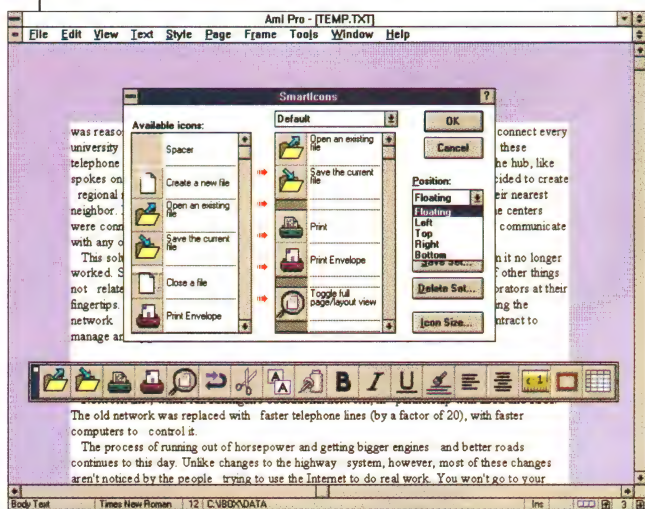
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Circle 102 on reader service card



ICONS ON THE MOVE. Position Ami Pro's SmartIcon toolbar virtually anywhere on screen using the SmartIcons dialog box.

tion drop-down list, select *Floating*, and click *OK*. You can now move the SmartIcon set as you wish and, to a lesser extent, resize it.

Revise Yourself You can use revision marking for more than just tracking changes other users make to a document: You can also use it to keep track of your own edits, making it easy to review them before committing to a final version. To turn on revision marking, either click the status bar button reading *Ins* or *Type* until a red 'Rev' appears, or select *Tools • Revision Marking • Mark revisions • OK*. With revision marking on, text you insert will appear in blue italics, text you delete will turn red with a horizontal strike-through mark, and lines containing changes will be marked by a vertical line in the margin. If you want to alter these defaults, select *Tools • Revision Marking • Options*.

When you are ready to review your proposed revisions, select *Tools • Revision Marking*. If you know you want to accept all your revisions, click the *Accept All Rev* button. If you want to review them individually, click *Review Rev*, then accept or cancel changes when prompted.

Take Note Yellow sticky notes have become standard office tools, especially for attaching comments to reports and memos. Ami Pro lets you do much the same thing electronically. With the insertion pointer where you want to stick the note, select *Edit • Insert • Note*. Type your comments, then click anywhere outside the note or press *<Esc>* to exit. Voilà—instant sticky note. Whoever wants to view your comments can double-click on the

little yellow square markers in the document. (If the note markers are not visible, select *View • View Preferences • Notes • OK*.)

If you wish, you can number and attach your initials to these notes: Select *Tools • User Setup*, and check *Display Initials in Text*. Your first note will appear followed by your initials and the numeral 1. The next will be numbered 2, and so on.

If you want these notes to print, select *File • Print • Options • With notes • OK*. Note markers will appear

in the main text, and after printing the main text, Ami Pro will add additional pages with the contents of your notes.

Fill In the Blanks Do you need to create a form with nicely aligned blank lines like this?

Name: _____

Address: _____

Telephone Number: _____

You can by using right tabs and underscore leaders.

First enter the text that you want to precede the blank lines. Then be sure you're in *Layout* mode and the ruler is showing. (If it isn't, select *View • Show Ruler*.) Click the ruler with the left mouse button to activate the tab bar. Click *Clear Tabs* and then the *Right Tab* button. Click the *Leader* button once so that solid lines appear at the top of each tab button, then click the gray bar above the ruler at the point you want the tab stop.



Now you can return to your text by clicking at the end of the first line of text where you want to add a blank line. Press *<Tab>* and the line will appear, extending to your tab stop. To turn off underlining for other tab spaces, click the *Leader* button three times.

WordPerfect 6 for Windows

A Gentler, Simpler Template When toiling away at the small screen of a notebook, you may prefer to see fewer buttons and menu options. Choose *File • Template • wplite • OK*, and you'll get a stripped-down version of WordPerfect. Or if you're switching from another program—Ami Pro 3.0, Word for Windows 2.x, or an earlier version of WordPerfect—you can choose templates that will make you feel more at home. One warning: After installing a new template, the *File • Template* command may disappear. Don't panic. The *Template* command is merely hiding under *File • WPWin Additions*.

Macro ID WordPerfect power users appreciate the program's variety of macros. To learn what different macros do, select *Tools • Macro • Play* (or press *<Alt>•<F10>*) then click the *List* button or press *<F4>* or *<Alt>•<Down>* to see a list of available macros. Click *Setup*, click the button next to 'Show', and select *Descriptive Name, Filename* from the pop-up list. Click *OK*, and you'll see a short description of each macro in the left pane. Click any macro to get a fuller description at the bottom left of the dialog box.

Multiple-Document Launches WordPerfect has more in common with Word for Windows than just the first four letters of its name: Both, for instance, let you open multiple files at the same time. Select *File • Open*, hold down the *<Ctrl>* key, select the files you want to open (you can have up to nine files open), and click *OK*.

The Telltale Cursor When you're working in a table, keep your eyes on the mouse pointer. When it's positioned just to the right of a cell's left edge, it will turn into a left-pointing arrow. A single click will now select that cell; a double click will select the row, and a triple click will select the entire table. Similarly, when the pointer is positioned just below a cell's top edge, it will turn into an upward-

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With amazing new **CleanSweep™**, you'll have spotlessly clean Windows. *Reclaim megabytes of storage* for dramatically more hard disk space and better system performance!

Easy-to-use **CleanSweep** is the safest, most powerful uninstaller...and more! Designed by **Quarterdeck®** to run *in all Windows environments*, it sweeps away outdated applications and unnecessary files safely and completely! Now, you can...

- 🧹 **Uninstall Unwanted Applications:** Analyze programs instantly...then do thorough uninstalls file-by-file or all at once.
- 🧹 **Remove Unused Files:** Get rid of temporary files, backup files, archive files, help files, graphic files.
- 🧹 **Remove Wasteful Duplicate Files.**
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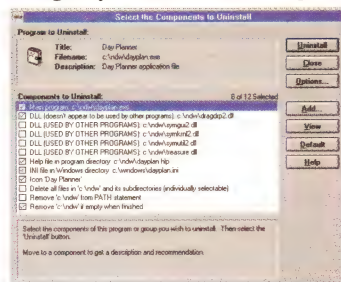
You must be completely satisfied or you can return **CleanSweep** within 30 days for a full refund.



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You can't make a mistake! CleanSweep backs up and confirms every action automatically, allows you to view *before* deleting, and even restores files if necessary. **CleanSweep** includes a network uninstall to remove programs from *all* workstations...not just the server.

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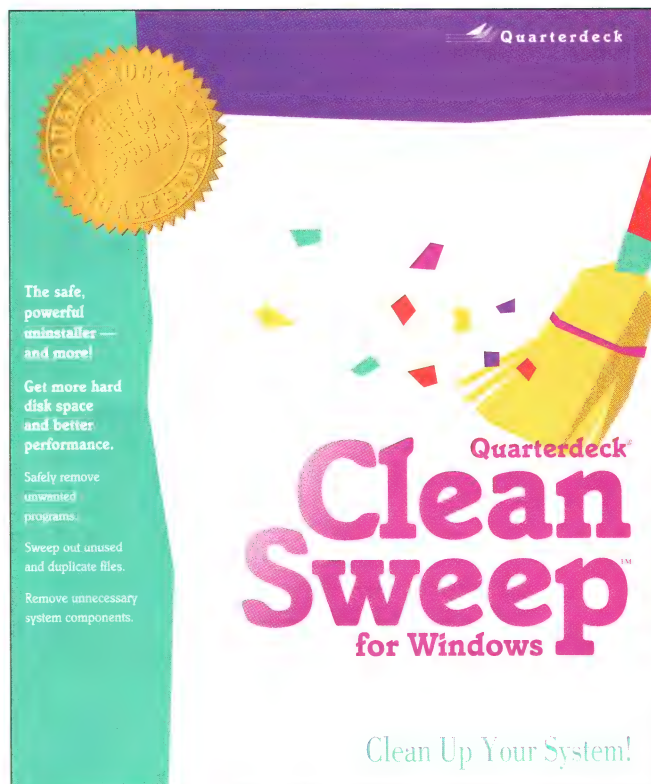
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Circle 225 on reader service card

pointing arrow. When it does, a single click still selects that cell and a triple click still selects the whole table, but a double click now selects the column.

QuickList Files The QuickList is good for more than just giving directories long, descriptive names. You can also use it to store frequently used files. In the Open File or Save As dialog box, click *QuickList* and select *Add Item*. Click the *List* button, select the correct drive and directory, then click *OK*. Append the name of the file to the path in the Directory/Filename text box, and add a description underneath if you wish. When you're done, click *OK* twice.

A File Manager by Any Other Name You probably know you can take care of everyday file management chores in the Open File and File Save As dialog boxes just by right-clicking the mouse to call up QuickMenus.

But you can also copy files from one directory to another by selecting the files in the File pane and dragging them to the QuickList or Directory pane; if you want to move the files, hold down **<Shift>** as you drag them. You can also sort files by date, size, or extension (in addition to file name and description) by selecting *Setup* and clicking the button to the right of 'Sort By' for a list of sorting keys.

Status Seeker Many users consider the default status bar in WordPerfect 6.0 a tad barren. To give it a makeover, right-click it, choose *Preferences*, and check the items you want displayed. Before you close the Status Bar Preferences dialog box, modify the

boxes to your liking: Resize boxes by dragging their left or right edge, reposition them by clicking inside them and then dragging, or delete them by dragging them off the status bar. A final *OK* completes the process.

QuickMarks the Spot When you reopen a document to edit it, chances are you want to return to the spot where you previously were working. Two steps make finding your place easier than scrolling and squinting.

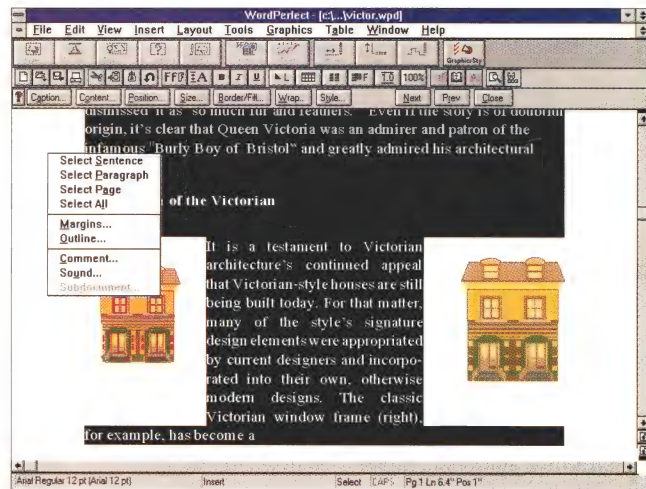
The first part is simple: Configure WordPerfect to set a QuickMark when you leave a document by selecting *File•Preferences* double-clicking *Environment*, and then selecting *Set QuickMark on Save•OK•Close*.

The next part—making these QuickMarks easy to find—takes a bit more work. Open a document based on your standard template, and select *Insert•Bookmark•Set QuickMark*. Next, open *Tools•Macros•Record*. When WordPerfect asks for a macro name, enter a key combination such as **<Ctrl>•<Shift>•F** (for Find). Select *Record*, then *Insert•Bookmark•Find QuickMark*. Open *Tools•Macros* again, and select *Record* again to stop recording.

From now on, pressing **<Ctrl>•<Shift>•F** when you open a document will take you right to where you ended your last editing session. You can also assign this macro to a button on the Button Bar; just right-click the Button Bar, select *Edit•Play a Macro•Add Macro*, type in the name of your new macro, and then click *Select*. If WordPerfect asks, 'Save macro with full path?', choose *Yes*. Select *OK*, and the new button will appear.

Edit Your Button Bar Button Bars are great time-savers, but switching from one bar to another is a clunky operation. To make the switch

faster, right-click the Button Bar and select *Preferences*, then select *Edit*. Select *Activate a feature*, and in the Feature Categories drop-down list, choose *File*. In the Features list box, select *Button Bar Preferences*, then click *Add Button*. A new button appears on the Button Bar. Select *OK•Close*. When you click the new button, a dialog box will appear, and you then can select the button bar you want. Repeat these steps to add this button to your other Button Bars.

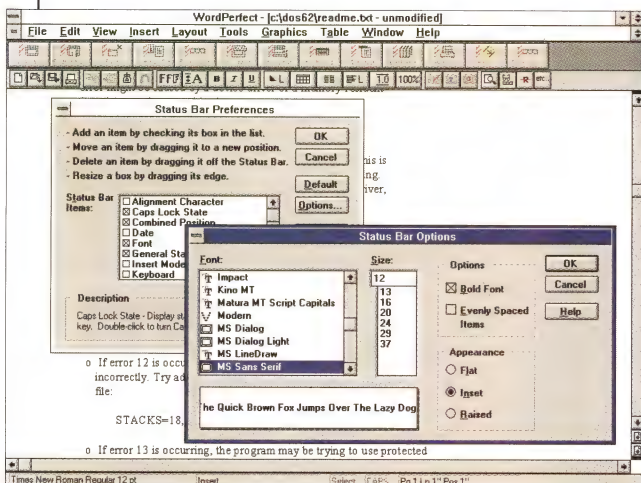


SELECT AN ENTIRE PAGE in WordPerfect. Move the I-beam cursor to the left until it changes into a mouse pointer, then hold down the right mouse button to access QuickSelect mode.

Page Me For some reason, it's hard to select a page in most word processors—you can select a word, a sentence, a paragraph, or even the whole document with a couple of mouse clicks, but not a page. That's not the case in WordPerfect. Move the mouse pointer to the left margin, where it flips to the right (this is called QuickSelect mode). Right-click to call up the QuickMenu, where you can select a sentence, a paragraph, the entire document, or, yes, just the page.

Faux Print Preview WordPerfect doesn't have a Print Preview feature per se, but you can simulate one by selecting *View•Zoom•Full Page•OK*.

Steve Fox is a senior editor and Dan Miller an associate editor at PC World. For tips, thanks to Dan Fingerman (author of Ami Pro 3 Made Easy, Osborne/McGraw Hill, Berkeley, California, 1992), Rich Zaleski (writer and consultant), and Steve Bass (contributing editor, PC World). Research assistance by John Heim (programmer and consultant) and Judy Heim (contributing editor, PC World).



CUSTOMIZE WORDPERFECT'S STATUS BAR. Right-click it, select *Preferences*, then choose the items you want displayed.

It hit *us* over lunch.

If *we* could order



the combo,

maybe

we could

offer one.

Will that *be* regular?

Slimline Venturis 466

- Slimline easy-access enclosure
- 486DX2 66MHz
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- 270MB hard drive (enhanced IDE on local bus)
- 14" SVGA color monitor
- Integrated 32-bit S3™ Trio graphics accelerator with 1MB DRAM
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- 3.5" 1.44MB diskette drive
- Multi-level security features
- Desktop Management Interface-ready
- Pre-installed MS-DOS® 6.22 & Windows™ for Workgroups 3.11

DECwriter 110i

- 3ppm output
- Money-saving ink cartridge
- Ink supply indicator light
- 5 resident fonts
- Color upgrade option available
- 2-year warranty

Combo Price
\$1,867

Venturis 433sx

Same specs as above, with 486SX/33MHz CPU

with printer shown **\$1,665**

Venturis 4100

Same specs as above, with 486DX4/100MHz CPU

with printer shown **\$2,385**

DECwriter™ 110i
\$319
if purchased separately

(Shown w/optional
color upgrade)



Venturis™ 466
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Our on-screen "Getting Started" program makes set-up a breeze. And with its easy-access enclosure you can get inside without tools or having to disconnect peripherals.

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Not here.

This ink-jet model delivers laser-sharp text at up to 3 pages per minute—and graphics that are up to twice as fast as its competitors.

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\$2,798
if purchased separately



DECwriter™ 500i
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(Shown w/optional color
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Free CorelDRAW™

Slimline Celebris 590

- Slimline easy-access enclosure
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- 8MB RAM (exp. to 128MB)
- 270MB hard drive (enhanced IDE on local bus)
- 14" SVGA color monitor
- Plug and Play ready
- Integrated 64-bit S3 864 PCI graphics accelerator with 1MB DRAM
- 256KB secondary cache (exp. to 512KB)
- 4 storage bays (2 ext., 2 int.)
- 3 slots (1 ISA, 1 PCI/ISA, 1 PCI)
- 1 EPP/ECP parallel port, 2 buffered (16650) serial ports
- 3.5" 1.44MB diskette drive
- Multi-level security features
- Pre-installed MS-DOS 6.22 & Windows for Workgroups 3.11

DECwriter 500i

- 5ppm output
- Money-saving ink cartridge
- Ink supply indicator light
- 5 resident fonts
- Color upgrade option available
- 2-year warranty

Combo Price
\$3,127

Celebris 360

Same specs as above, with
Pentium 60MHz CPU

with printer shown **\$2,827**

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PC MODELS

See inside for complete specs. Full Profile PCs available with 2 extra slots, a 5.25" front-accessible bay and a PCMCIA bay.

Venturis Slimline

Model	Processor	Price
433sx	486SX/33MHz	\$1,079
466	486DX2/66MHz	\$1,299
4100	486DX4/100MHz	\$1,799

Celebris Slimline

560	Pentium/60MHz	\$2,199
590	Pentium/90MHz	\$2,499

HARD DRIVES

Upgrade to 540 IDE	\$399
Upgrade to 1GB SCSI	\$849

RAM

Venturis	4MB	\$200
	16MB	\$700
Celebris	4MB	\$200
	16MB	\$700

MONITORS (Energy Star-Compliant)

14" SVGA	\$299
15" Multi-frequency	\$449
17" Multi-frequency	\$999
21" Multi-frequency	\$1,999

PRINTERS

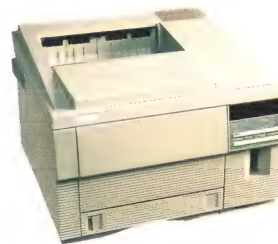
DECLaser™ 3500



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 - 3MB memory (exp. to 19MB)
 - 53 resident fonts
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with PC purchase **\$1,749***

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DECLaser 5100



- 8ppm print speed
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 - Serial/Parallel/LocalTalk interfaces standard
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Home Runs

BEST FAMILY PCs

Family PCs are jam-packed with multimedia goodies, free software, and friendly interfaces. We put new systems through their paces to find the right fit for the family room.

BY VALERIE SINGER

S hopping for a home PC is a lot like searching for a mate. You start out looking for perfection and wind up deciding compromise isn't so bad. That's what we found after living and working with some of the latest home PCs. We never got our dream machine: low price, easy setup, clear tutorials, good performance, and a hefty software bundle. But the trade-offs that were once the hallmark of home PCs are becoming fewer and fewer.

From among the latest crop of home PCs, we examined competitive systems from AST, Compaq, Gateway 2000, IBM, Micron, and Packard Bell. All boast hot multimedia and communications capabilities and software bundles. Each comes with a minimum of a 66-Mhz 486DX2 processor, 8MB of RAM, a 420MB hard drive, a fax-modem, a double-speed CD-ROM drive, and a 16-bit sound card.

DAVID PETERS

Our evaluation started with unpacking the boxes and following the manufacturer's setup instructions to the letter. Would someone who'd never set up a PC be up to the task without wanting to throw tools across the room? You bet. Quick-start instructions, color-coded cords, and pictures on the case helped make setup foolproof for most systems. The AST Advantage Adventure 4066d was the easiest—up and running in 4 minutes. The Packard Bell Multimedia 486 took the longest. Setup was a snap, but mounting the speakers took 29 minutes.

All but one of these home PCs have a custom interface to introduce first-time users to computers and make Windows navigation easier. Packard Bell was the most creative with its Navigator 2.0, which provides a comprehensive tutorial along with separate work areas for adults and kids. We also liked the Phoenix Home Office from Micron, which launches software from a bookcase and lets you turn the speakers on and print a file just by clicking on icons.



THE AST ADVANTAGE ADVENTURE'S all-in-one design makes setup effortless and also offers sophisticated telephony features.



THE PRESARIO CDS 924 from Compaq comes with an armload of CD-ROM titles and a reputation for great service and reliability.



GATEWAY'S ENTRY INTO THE HOME MARKET, the 4DX2-66 Family PC, is a great value but leaves out many special home features.

No longer an afterthought, software is a major selling point. Most companies provide a mix of reference, entertainment, and productivity applications; all these PCs offer an encyclopedia, a personal finance package, an integrated package, and games. Packard Bell wins for sheer volume.

All these systems can be upgraded to faster microprocessors, and most have room for more memory or an additional hard drive. Other options vary. AST's unit sacrifices expandability for ease of use. Micron's P90 Home MPC gives the most room for add-ons.

What do *you* want from a home PC? Reasonable hardware at a low price? Look at the Gateway 2000 Family PC. Want an integrated design that's easy to use and can go anywhere? The AST Advantage Adventure 4066d might be for you. For the more demanding, two PCs stand out as the best overall machines for the home: the IBM Aptiva 530 and the Micron P90 Home MPC.

The Micron, the most expensive in the bunch, is also the fastest and most sophisticated. And it's got more than raw power. It comes with an innovative interface, a respectable selection of software, and a joystick for the gamer in the family. If you're crunching numbers at home or just want room to grow, this one's for you. IBM's Aptiva 530 combines sleek design, impressive performance, and state-of-the-art features—including a phone answering system, scheduling software, and voice recognition. Innovation doesn't come cheap, but the system is backed by IBM's quality and service—two criteria many home buyers *aren't* willing to compromise.

Valerie Singer is an editorial intern at PC World. She can be reached on PC World Online (see page 12 for contact information).

For more information about all products in this article, circle reader service no. 910.

AST Advantage Adventure 4066d

PROS: Complete phone answering system, easy setup, small footprint

CONS: Immobile integrated monitor, limited upgrade options

AST's new Advantage Adventure 4066d is the only all-in-one system reviewed here. An integrated design and software tutorials make this system a breeze for computing newcomers. The biggest trade-off is its limited expandability.

Adventure 4066d is smart and compact, with built-in speakers and a microphone. Taking four minutes to set up, it comes with

AST Works 2.0, a Windows shell with video tutorials, a telephone answering system developed by AST and Creative Labs, and a variety of applets. Besides the standard encyclopedia and integrated package, the software bundle includes Lotus Organizer, Microsoft Golf, Cinemania, and trial memberships to Prodigy, America Online, and CompuServe.

AST is near the top of the pack in both service and reliability, according to *PC World's* monthly reader fax poll. The Adventure 4066d comes

with a three-year warranty and one year of free on-site service and is covered in this month's system review (see "Newcomers Reach New Heights"). *AST Research*, 800/876-4278, 714/727-4141 **Reader service no. 640**

Compaq Presario CDS 924

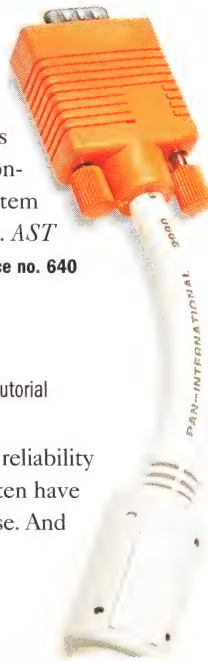
PROS: Excellent reliability and service, loads of software, good tutorial

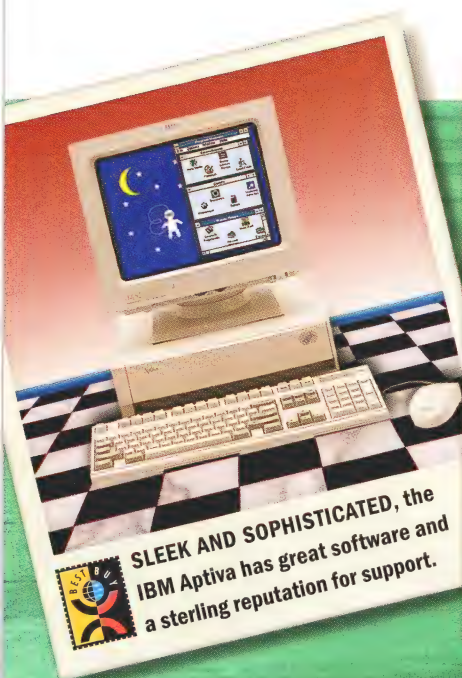
CONS: Noisy fan, pricey

Nobody beats Compaq's excellent reputation for reliability and service, a big concern for home users who often have no technical advisors to turn to when problems arise. And



NAVIGATOR 2.0 makes it even easier to use Windows on the Packard Bell Multimedia 486.





SLEEK AND SOPHISTICATED, the IBM Aptiva has great software and a sterling reputation for support.



THE MICRON P90 is an affordable Pentium system that's powerful and designed with home users in mind.



PACKARD BELL'S Multimedia 486 is a breeze to set up, and its Navigator was the best interface we saw.

if you buy your system direct from Compaq, the Presario CDS 924 comes with a money-back guarantee, which provides an added level of security for home PC buyers.

Compaq introduced its first Presario in 1993 and has since aggressively pursued the home market. Every Presario comes with a dazzling array of software, including trial memberships to Prodigy, America Online, CompuServe, and the Imagination Network. Other enticing features for the home include a speakerphone and message center (though the system must stay on to take advantage of them). With an eye toward first-time buyers, Compaq has boiled the setup process down to a concise 10 steps. It took us 13 minutes to set up the 924—about average for the group of PCs we tested.

Compaq's TabWorks Windows shell leaves a lot to be desired, but its tutorial and Media Pilot software (which controls the sound, CD-ROM drive, and so forth) are first rate. Compaq doesn't skimp on the hardware either. The 924 comes with 8MB of RAM and a 525MB hard drive. The machine's tower design leaves plenty of room for upgrading. The 15-inch multimedia monitor had built-in speakers and a crisp display.

But it's sold separately—and will set you back around \$500 (included in the price listed here).

There's a lot to like about the Presario CDS 924—it's well made and comes with a good tutorial, a hefty software bundle, and useful home-oriented features. It's covered in this month's system review (see "Newcomers Reach New Heights"). But it's also expensive. And for those willing to pay for a top-notch system, the Aptiva 530 from IBM is a better buy. *Compaq Computer*, 800/345-1518, 713/370-0670 **Reader service no. 643**

PACKARD BELL'S colorful cables make setup easier.



JUST CLICK ON THE BOOKSHELF to launch an application in Micron's Phoenix Home Office.

Gateway 2000 4DX2-66 Family PC

PROS: Low price

CONS: No simplified setup, lacks distinctive home features

Although the Gateway 2000 Family PC is priced to fit a family budget, it's missing the consumer-oriented features of other home PCs. It has a limited software bundle but does not include a custom interface for novice users, a phone answering system, or the fool-proof setup instructions common on other home PCs.

The Gateway's biggest strength is its price. At \$1899, it's one of

the lowest-priced PCs tested (though it comes with only a 14-inch monitor). The system has a 730MB hard drive—and there's plenty of room to grow. When it comes to reliability and service, Gateway is a mixed bag. Based on responses to our monthly poll, Gateway is below average for reliability but above average in service. All Gateway PCs come with a three-year warranty, with on-site service.

If you're more concerned about price than software tutorials, telephony features, trial memberships to online services, and easy setup, take a look at the Gateway 4DX2-66 Family PC. It isn't

the perfect family computer, but it might be *your* dream machine. *Gateway 2000*, 800/846-2000, 605/232-2000 **Reader service no. 677**

IBM Aptiva 530

PROS: Well designed, fastest 486, innovative telephony features, first-rate reliability and service **CONS:** Huge monitor, expensive



We liked the looks of the Aptiva 530 right away. Smaller than most PCs, it doesn't consume much desk space. The lid on the front panel keeps out dust—and curious children—and illustrates an attention to detail that characterizes IBM. The Aptiva 530 is expensive (almost as much as Micron's Pentium 90 offering),



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IF YOU'RE F. MICHAEL WILCOX,

you take Microsoft Office.[®] Everywhere. You see, as a Specialist for G.E.'s Apparatus Service Department, Mr. Wilcox wrestles with the machines they use at big mining operations and pulp mills.

One of these babies goes down and a company can start losing \$40,000 an hour, which makes Microsoft Office extremely important to Mike. Oh, he's tried other things. But he doesn't like to talk about it. He'd rather tell you that during the first year of rollout, he and Microsoft Office saved one of his customers a whopping \$375,000. (Now imagine putting that on *your* résumé.)

The reason Mike can work miracles (and you can too) is because everything in Microsoft Office works together seamlessly. For starters, there's Microsoft Access, the database application where every piece of information on every piece of equipment G.E. monitors is stored.

Say Mike wants to do a graphical trend analysis, and maybe some charting to figure out when a gasket might blow. First he hits the "Analyze It" button, which automatically turns his database table into a Microsoft Excel spreadsheet. Then he and the built-in



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WITH
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Wizard whip up a chart. Next stop on the assembly line: Microsoft Word. Here Mike uses a template to draft a report warning about that problem gasket. If it's serious, he shoots everything over to Microsoft PowerPoint,[®] includes a few thermographic photos, blazes over to the site and presents his finds right there in the van.

So the machine doesn't blow a gasket. The client doesn't blow a gasket. And Mike gets to ride heroically off into the sunset.

For a free catalog about how Microsoft Office can help you take on the monsters you face, call (800) 240-4782, Dept. EME.



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separately.) For information only. In the 50 United States, call (800) 240-4782, Dept. EME. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers who are deaf or hard-of-hearing can

but it's easily the best designed home system we reviewed.

Software is the real show here: With Wake-Up on Ring, the Aptiva identifies an incoming phone call, powers up, takes a message, and turns off—you don't have to leave it on as with the Compaq and AST. With the Scheduler, you can tell the system to wake up at 2 a.m., send a fax, then shut off. AptivaWare, IBM's Windows interface, organizes software and functions into logical groups and even includes an area on ergonomics.

IBM's reliability and service record is first rate, with one of the lowest problem and DOA rates in our reader poll. The Aptiva comes with a three-year warranty, and under its Express Maintenance plan, IBM will deliver replacement components free during the first year.

The Aptiva 530 isn't for everyone—its \$2399 price tag puts it out of the range of some family budgets. But its innovative design and features set it apart from other home PCs and earn it a Best Buy. *IBM PC Company, 800/426-3377, 408/553-2922*

Micron P90 Home MPC

PROS: Pentium technology close to DX2 pricing, innovative Windows shell, clear setup instructions, joystick **CONS:** Pricey



Clearly the best overall value, the Micron P90 Home MPC gives you speed, excellent service, and room to grow. It comes in a minitower case that opens easily for installing add-ons. (Desktop versions are also available.) With lucid instructions and a detailed poster, setup was a snap. The back of the CPU had pictures illustrating where to plug in each of the cords.

Micron's unique Phoenix Home Office interface looks like a well-equipped home office; applications are represented as books on a

A HINGED LID protects the IBM Aptiva 530's disk drives from dust and fingers.



bookshelf. Click on the speakers to turn them on, click on the printer to print, and so on. The only thing missing was a tutorial.

Besides trial subscriptions to AOL, CompuServe, and Prodigy, Micron includes Encarta, Microsoft Works, and three LucasArts games—hence the need for the bundled joystick. You also get the CD Deluxe version of Quicken, rather than the stripped-down "special edition" included with other systems.

Like Gateway, Micron gets a mixed review in reliability and service from our reader poll. Higher-than-average DOA and problem rates keep the reliability rating low, but Micron is the best at service.

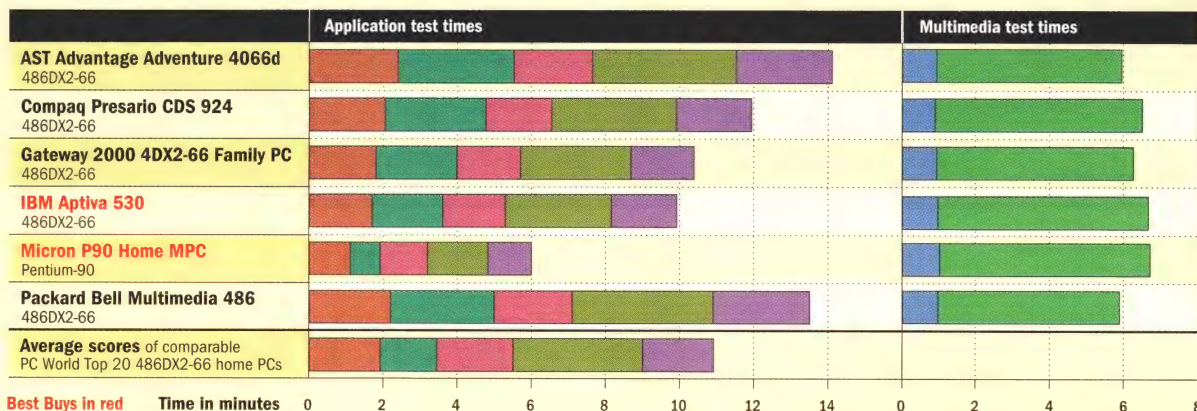
If you want a powerful PC that will ease the transition to computing for new users, the Best Buy Micron P90 Home MPC is for you. *Micron Computer, 800/223-6571, 208/465-3434 Reader service no. 657*

Packard Bell Multimedia 486

PROS: Easy setup, hefty software bundle, excellent shell and tutorial, low price **CONS:** Service problems, slow, speakers difficult to mount

Packard Bell has been in the home market longer than any other PC company, and its knowledge of home users' needs is apparent in the Multimedia 486. Installation is simple, and the Windows shell and tutorials are first rate. And at \$1899, the 486 is one of the least expensive PCs we tested. If it sounds too good to be true, it is. Packard Bell continues to be dogged by a poor service record.

TEST REPORT: HOME PCS



We ran each system through two test suites: a home version of our standard application test suite that included performance testing with Word 2.0 for Windows, Excel 4.0, Freelance 1.0 for Windows, WordPerfect 6.0 for DOS, and 1-2-3 release 3.4 for DOS; as well as a multimedia test suite. For a complete description of the application test suite, see this month's system review, "Newcomers Reach New Heights."

Application Tests

- Word 2.0 for Windows
- Excel 4.0
- Freelance 1.0 for Windows
- WordPerfect 6.0 for DOS
- 1-2-3 release 3.4 for DOS

Multimedia Tests

- Animator Pro 1.3A
We executed a batch file that calls and plays a series of FLI files totaling 16MB. We measured the total playback time.
- Microsoft Video for Windows 1.1
We played an AVI video clip mastered with a window size of 320 by 240, a

color depth of 16 bits per pixel, and a transfer rate of 300 kbps. We used Intel's Indeo version 3.1 software compression scheme. The clip was mastered for 15 frames per second.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

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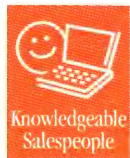
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But of all the innovations for taking the fear out of setup, Packard Bell wins for foolproofing: Multicolored connectors—orange, teal, and purple—match colored slots. Navigator 2.0 helps novices maneuver multimedia applications and is easily the best Windows shell we saw. There's an excellent tutorial, a guide to support options, and a place just for kids. It also comes with an armload of software: Five Knowledge Adventure products for kids, three Grolier's reference titles, trial online access, and more. The Multimedia

486 was one of the slowest we tested but posted respectable times in the multimedia exercises. Memory can be expanded to 64MB—less than some competitors, but plenty of room to grow.

On the whole, the Multimedia 486 is well suited to the home market. Unfortunately, Packard Bell consistently rates among the worst in service in our reliability and service poll, keeping us from recommending this PC. *Packard Bell Electronics, 800/733-5858, 818/865-1555* **Reader service no. 769**

FEATURES COMPARISON

Today's Home PCs: Fewer Compromises, More Surprises

	AST Advantage 4066d	Compaq Presario CDS 924	Gateway 2000 ADX2-66 Family PC	BEST BUY IBM Aptiva 530	BEST BUY Micron P90 Home MPC	Packard Bell Multimedia 486
● Yes ○ No						
Standard features						
Street price as of 10/23/94 ¹	\$1799	\$2398	\$1899	\$2399	\$2499	\$1899
CPU	DX2-66	AMD DX2-66	DX2-66	DX2-66	Pentium-90	DX2-66
CPU or upgrade socket	168-pin	238-pin	238-pin ZIF	238-pin ZIF	238-pin ZIF	236-pin ZIF
BIOS	Phoenix	Compaq	Phoenix	IBM	Phoenix	Phoenix
Installed/maximum RAM (MB)	8/36	8/120	8/80	8/128	8/192	8/64
72-pin SIMMs	●	●	●	●	●	●
SIMM sockets/number free	2/1	3/1	3/1	4/2	6/4	2/1
Secondary RAM cache installed/maximum (K)	0/0	0/128	128/128	256/256	256/512	0/512
Case style	all-in-one	minitower	desktop	compact	tower	desktop
Free externally accessible 3½/5¼-inch drive bays	0/0	1/3	1/2	2/3	1/3	1/1
Free internal 3½/5¼-inch drive bays	1/0	0/0	0/0	1/0	2/0	1/0
Free 32-bit EISA/16-bit ISA/8-bit ISA expansion slots ²	0/2/0	0/5/0	0/3/0	0/3/0	0/4/0	0/1/0
PCI or VL bus slots/number free ²	0/0	0/0	2 PCI/1	2 VL/1	3 PCI/2	0/0
Hard disk	WD Caviar 2420	Compaq	WD Caviar 2700	WD Caviar AC2420	Conner CFA540A	Conner CFA540A
Size (MB)	420	525	730	420	540	540
Adapter	integrated	integrated	integrated	integrated	integrated	integrated
Floppy drives (MB)	1.2,1.44	1.44	1.44	1.44	1.44	1.44
Graphics adapter	integrated	integrated	integrated	integrated	Stealth 64 2MB	integrated
Installed VRAM/DRAM (MB)	0/1	0/1	0/1	0/1	0/2	0/1
Monitor	built in	Compaq	Gateway 14SVGA	IBM 2115-001	Mag LX145	Packard Bell 1511SL
Screen diagonal (inches)	14	15	14	15	14	15
Modem data/fax speed (kbps)	14.4/14.4	14.4/14.4	14.4/14.4	14.4/14.4	14.4/9.6	2.4/9.6
Sound board	Creative Labs Sound Blaster	integrated 16-bit stereo	Gateway	Prometheus/Aria 16	Creative Labs Sound Blaster	OEM/Forte 16-bit
CD-ROM drive	Sony/CDU 55e	various	NEC/CDR 260	Mitsumi	Mitsumi/FX001-D	Matsushita-Ktobuki
Data transfer rate (K/sec)	300	300	300	300	300	300
Parallel/serial/mouse/SCSI ports	1/2/1/0	1/1/1/0	1/2/1/0	1/2/1/0	1/2/1/0	1/1/1/0
Number of bundled software applications	7	6	6	11	6	15
Service and support						
Warranty (years)	3	3	3	3	1	1
30-day money-back guarantee	○	●	●	●	●	●
One year free on-site service	●	●	●	○	● ³	●
Service center turnaround (days)	2	2	none	2	2	none
Daily toll-free phone support (hours)	24	24	18	24	13	24
Weekend support	●	●	●	● ⁴	●	●
BBS	●	●	●	●	●	●
Fax	●	●	●	●	●	●

¹ All systems priced as configured with DOS 6.0 or later version, Windows 3.1, VGA color monitor, keyboard, and mouse or other pointing device. Price is direct or based on vendor estimate.

² One less 16-bit slot available when all PCI slots are filled, and vice versa. VL bus slots also accept 8- and 16-bit ISA cards.

³ On-site service provided through GE.

⁴ Saturdays only.

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TOP 20 PCs

NEWCOMERS REACH

First-time entrants win three out of four number one spots this month. At the top: the Micron P90PCI PowerStation, MIS Slimline 66, Compaq LTE Elite, and WinBook XP DX2/50.

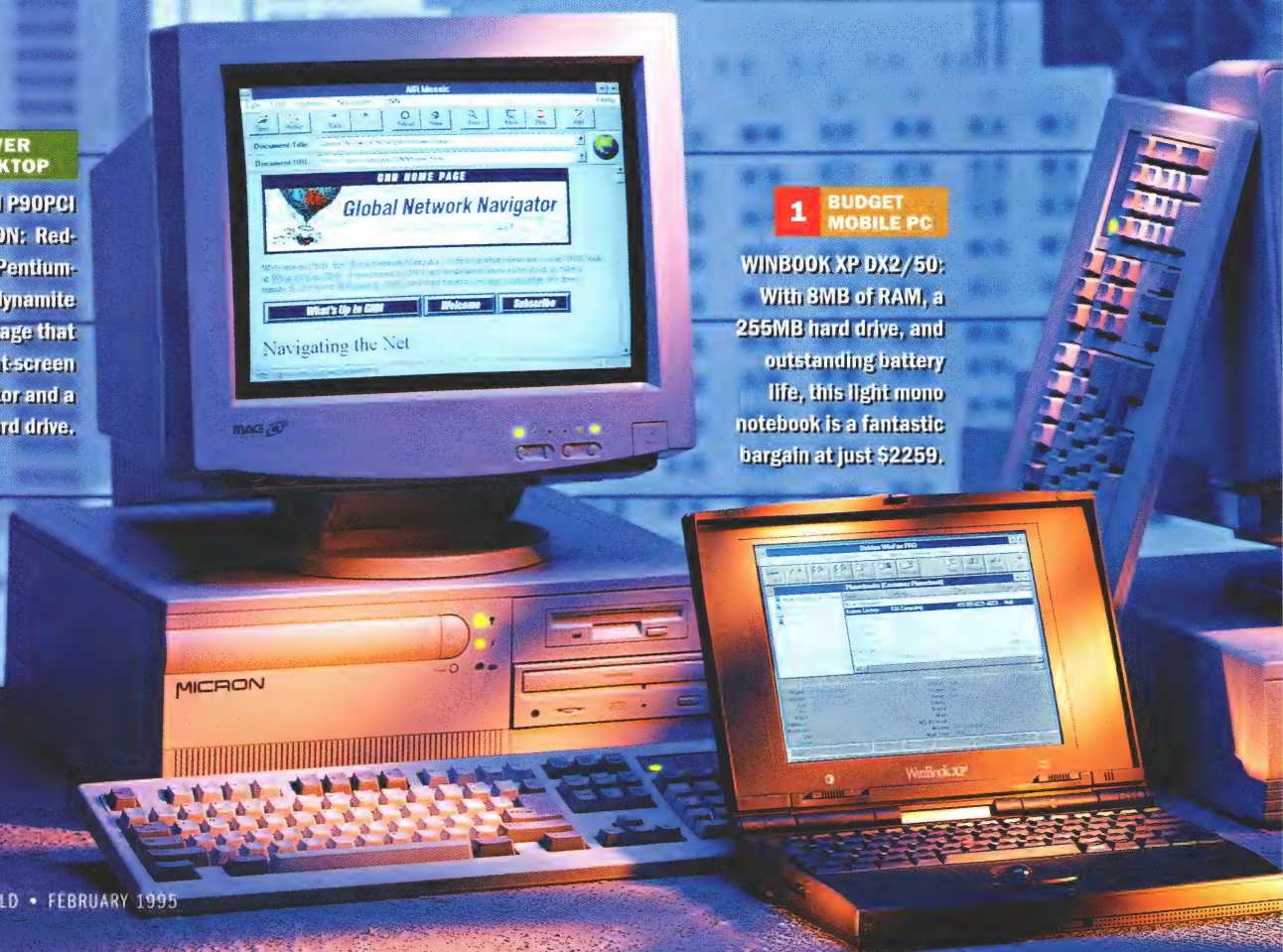
NEW

1 POWER DESKTOP

MICRON P90PCI POWERSTATION: Red-hot \$3398 Pentium-90 has a dynamite package that includes a flat-screen monitor and a 1080MB hard drive.

1 BUDGET MOBILE PC

WINBOOK XP DX2/50: With 8MB of RAM, a 255MB hard drive, and outstanding battery life, this light mono notebook is a fantastic bargain at just \$2259.



STAN MUSLER

THIS MONTH'S CONTENDERS

- Power Desktops page 194
- Budget Desktops page 202
- Mobile PCs page 208

HEIGHTS

1 BUDGET DESKTOP

MIS SLIMLINE 66: Bare-bones DX2-66 is a rock-solid basic budget workstation. You do get a 15-inch monitor and a 420MB hard drive. Not bad for a mere \$1660.

1 POWER MOBILE PC

COMPAQTE ELITE: DX4-75 has terrific battery life, fast performance, a great color screen, superior design, and top support.

IF YOU'RE A PC WORLD REGULAR,

you're well acquainted with the one constant in the PC world: *change*. Season to season and month to month, there's no room for complacency—unless you want to overlook crucial developments and miss out on the best buys in PCs. That's why readers turn to our Top 20s—whether they are looking for power or budget systems, desktops or mobiles. Our reviews not only take an objective look at the latest systems, they also provide updated ratings for the best PCs available. Our Power and Budget Desktops Top 20s, for example, present the finest of some 300 systems that ran the gauntlet of our reviews in the last ten months. To maintain accurate evaluations of previously reviewed equipment, we monitor price, configuration, and service and reliability ratings monthly and update all changes.

In every issue you'll find significant shifts: This month, three of the four number one systems on our Top 20 charts are brand-new, with first-time reviews in this issue.

Our new champions constitute a powerful lineup of business systems, each aiming to fill a specific need. The top power

**BY REX FARRANCE
AND ANITA HAMILTON**

TESTING BY DEAN ANDREWS, DAVE CASINI,
ULRIKE DIEHLMANN, AND SUSAN SILVIUS;
RESEARCH AND SUPPORT BY MIKE SALAYKO

desktop system is the Micron P90PCI PowerStation. This \$3398 Best Buy Pentium-90 machine is the quintessential power system, with 16MB of RAM, a capacious 1080MB hard drive, and performance matched or marginally exceeded by only a scant few. This Micron powerhouse leads an extended parade of pumped-up Pentium-90 systems occupying the top 13 slots on our Power Desktops Top 20 chart. All but one of these power machines have 16MB of RAM, and all have a 530MB or larger hard drive.

At the top of the budget desktops, MIS's Slimline 66 provides

tium-60 PC's and a fantastic \$1901 price. With these assets, it earns a strong position on our Budget Desktops Top 20 chart.

Product offerings and market conditions aren't all that have shifted—we've changed too. Exactly one year after introducing the PC World Top 20s, we've revised our rating system. Reflecting the gratifying more-for-less market trend, we've lowered our budget desktop price ceiling. Now, every system on our Budget Desktops Top 20 chart costs \$2250 or less. And in all our ratings, we've turned up the emphasis on the features that you find most important. So hard disk size, quality and size of display, and amount of memory all count more. In addition, our ratings now give increased weight to the features that you need in order to use multimedia applications: CD-ROM drives, sound cards, and speakers.

When you compare the current Top 20 systems' performance ratings with those of PCs in previous issues, you'll notice that the numbers have gotten smaller. Because of the dramatic performance increases shown by all the new, more-powerful systems, we've reset the baseline on our performance measure. The numbers still have the same relative significance, one Top 20 PC to another. This month we have a new performance record holder, the torrid Acma P90, which also captures a Best Buy.

Always at Your Service

We launched our Reliability and Service Monitor last year, and we've been providing reliability ratings since June. We have recalibrated our ratings to better match the Reliability and Service Mon-

itor scores. The more feedback we get from readers about their experience with the companies they've bought equipment from, the more information we can report. So please take a moment to fill out the Reliability and Service Monitor that follows this article, and fax it back to us. Other readers will benefit from your personal observations, and you will automatically be entered in a drawing to win a Best Buy PC.

Rex Farrance is an associate editor and Anita Hamilton is an assistant editor for PC World. They can be reached on PC World Online (see page 12 for contact information). PC World staff members Mike Desmond, John Goddard, Arden Hoffman, Owen Linderholm, and Melissa Riofrio contributed to this article.

Call 800/434-4495 (for payment by Visa or MasterCard) or 900/903-2972 (for telephone billing) to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in advance (\$9.95). Touch-tone telephone required.

For more information about all products in this article, circle reader service no. 903.

Buying Smart: Consumer Tips

Use a memory manager.

A third-party utility or DOS 6.x's MemMaker will move device drivers out of conventional memory into upper memory to speed application performance.

Buy a bigger monitor for high resolutions.

A 15-inch monitor usually provides easy viewing at 800-by-600 resolution and may even be comfortable at 1024 by 768—but be sure to try before you buy.

Make a deal.

Vendors and dealers often leave sales reps room to bargain—so make it clear you want to cut a deal. If you make your calls toward the end of the week or the month, you increase your chances of catching sales agents needing to meet quotas.

Use a credit card.

Unless you already have a credit arrangement with the vendor, use a credit card to order equipment. The credit card company can help mediate disputes or give a refund if you fail to receive a product you've paid for.

an astounding bargain. Plain and simple in concept and design, this Best Buy DX2-66 delivers 8MB of RAM and a 420MB hard drive for a mere \$1660, making it a likely choice as a solid, basic office machine. If your taste runs to inexpensive multimedia systems, check out our fourth-place budget Best Buy, the Blackship Atlantis—also reviewed this month—which delivers the goods for an outstanding price of \$1695.

There's movement on the mobile front as well: Four new notebooks crack our Budget Mobile chart, and two capture Best Buys: At the top is the new WinBook XP DX2/50 monochrome system, which gives you a DX2-50 CPU, 8MB of RAM, a 255MB hard drive, and 6.75-hour battery life—not bad for \$2259! Joining it as a Budget Mobile PCs Best Buy is another WinBook, the XP DX4/75, which provides a DX4-75 CPU, 8MB of RAM, a color dual-scan monitor, and battery life of more than 5.5 hours. The price is a truly remarkable \$2359. On the Power Mobile side, the classy Compaq LTE Elite DX4-75, entrenched at the top since October, maintains its lead position.

Less Money, More Features

We always move fast to report on systems with new processors. This month we review three PCs that have just hit the market with 80-MHz processors manufactured by AMD and Cyrix. Of these, the Am486DX2-80-based Polywell Poly 486-80VB makes the best showing, with performance comparable to a typical Pen-

This Month's Contenders

Our look at this month's contenders for the Top 20 Power and Budget Desktops and the Top 20 Mobile PCs. Icons show where systems placed on the Top 20 charts.

Acer AcerPower MiniTower

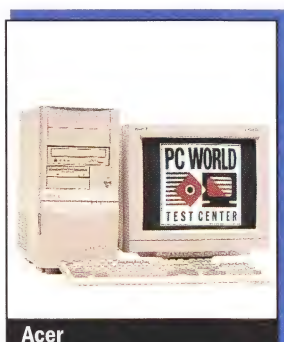
PC WORLD TOP 20
7 POWER DESKTOP

PROS: Good performance, big hard drive, multimedia setup
CONS: One-year warranty

Acer packs a lot of punch into this sturdy little unit, and the Pentium-90 AcerPower MiniTower performs well, thanks in part to its healthy 16MB of RAM and 256K of secondary cache. The 730MB hard drive is of a capacity that's quickly gaining popularity. In the solid graphics subsystem, a 2MB PCI graphics accelerator and a 15-inch Acer monitor furnish a crisp display.

The unit is set up for multimedia with a CD-ROM drive, a sound card, and speakers, plus Microsoft Encarta, Works, Cinemania, and Golf. You also get a 14.4-kbps fax-modem, Acer's version of Quicken, and an America Online starter kit.

With so much loaded into this small case, you still get four free drive bays and three free slots, including a PCI slot, and two unoccupied SIMM sockets. The secondary cache, however, is not upgradable. While Acer's one-year warranty is no great shakes, the 24-hour tech support is commendable. Strong performance, a rock-solid power configuration, and nonstop tech support contribute to making the \$3295 AcerPower MiniTower an excellent deal and earning it a solid position on our Power Desktops list. *Acer America, 800/368-2237, 408/432-6200* **Reader service no. 621**



Acma P90

PC WORLD TOP 20
3 POWER DESKTOP



PROS: Excellent performance, PCMCIA slot
CONS: One-year warranty, no weekend tech support, drive cage obstructs free slot

There was a time back in the sixties when a new land-speed record emerged from Utah's Bonneville Salt Flats every few months. We were reminded of that the other day when yet another *PC World* desktop speed record fell to a hot Pentium-90. All we had to do was unbox the Acma P90, launch our applications benchmarks, and watch this system burn up the charts. When the smoke cleared, this system emerged as the new performance top gun and the number three Power Desktops Best Buy.

For \$2999, you get 16MB of RAM expandable to 128MB, 256K of secondary cache, and a 540MB hard drive. A PCI-based 2MB VRAM Diamond Stealth 64 graphics board helps wring a few more RPMs from Windows' performance, while a 15-inch monitor provides good visibility. The Acma has some nifty extras, such as the front-panel PCMCIA slot that accepts one Type III or two Type II devices. This feature is a boon to owners who want to use PCMCIA devices on desktops as well as notebooks.

You get two free externally accessible drive bays—not bad on a system with a CD-ROM drive installed. But the hard drive cage obstructs one unoccupied 16-bit slot. So you're left with one free 16-bit slot, one free PCI slot, and one free slot that accepts either a 16-bit or a PCI card. Two free SIMM sockets are easily accessible. But Acma technicians are obviously not neat-freaks: We found a jumble of wires and cables inside the P90's minitower case.

Acma provides just a one-year warranty, but it's backed by on-site service. The 45-day money-back guarantee is better than usual, but the 10-hour-a-day tech support is available weekdays only. Readers do rate Acma products better than average for reliability on our Reliability and Service Monitor. This power desktop Best Buy is the kind of machine it takes to satisfy the user with a craving for raw power—so what matter a few rough edges? *Acma Computers, 800/786-6888, 510/623-1212* **Reader service no. 622**



Alaris EnergySmart PC DX

PROS: Low price, good 486 performance

CONS: 14-inch monitor, no weekend tech support

The new 80-MHz clock-doublers are the latest in 486 processors. Two of these CPUs—the AMD Am486DX2-80 and the Cyrix Cx486DX2 version 80—are now available in systems. The AMD chip powers the Polywell Poly 486-80VB, a member of the Budget Desktops Top 20, while the Cyrix CPU cranks out computations on the Alaris EnergySmart PC DX. Indications are that the AMD CPU has more performance potential. The EnergySmart PC turns in impressive 486 performance, although not at the level of the Polywell or the Robotech Cobra RS Home Runner AMD-powered PC that's reviewed here in "System Snapshots." The Alaris's performance is more on the level of a very hot 486DX2-66.

The \$1785 budget price buys exceptional value: 8MB of RAM expandable to 128MB, 256K of secondary cache expandable to 1MB, and a 420MB hard drive. You get a 1MB VL bus graphics card and an Alaris monitor with digital controls. Unfortunately the display is just a 14-incher, and it's unusually bulky. The Lexmark keyboard is, of course, top-notch. The design is clean, and three SIMM sockets are free. One free VL bus slot, five free 16-bit slots, and five free drive bays leave the upgrade door wide open.

Alaris's warranty covers the unit for a generous three years, and optional on-site service costs \$79 annually. Tech support is available only 10 hours a day and not on weekends. The manuals are well illustrated. All in all, this Cyrix Cx486DX2-80 system packs a lot of value, and it just misses a berth on our Budget Desktops Top 20. *Alaris, 800/317-2348, 510/770-5700* **Reader service no. 623**



THE TOP 20

PC WORLD

POWER DESKTOPS



1 Micron P90PCI PowerStation
Speed, RAM, jumbo hard drive.

➤ New this month ◀ No change from last month
▲ Up from last month ▼ Down from last month

BEST BUYS

BEST BUYS			Last month	Months on chart	Overall rating	Performance rating	Reliability/ service rating	Price	CPU	RAM (MB)	Hard drive (MB)	Bus slots
1	➡	Micron P90PCI PowerStation	—	1	90	86	70/85	\$3398	Pentium-90	16	1080	ISA, PCI
2	⬆	Austin P90	3	5	87	83	70/74	\$3599	Pentium-90	16	1060	ISA, PCI
3	➡	Acma P90	—	1	87	88	79/70	\$2999	Pentium-90	16	540	ISA, PCI
4	⬇	Micron P90 Home MPC	2	2	87	79	70/85	\$2499	Pentium-90	8	530	ISA, PCI
5	⬇	Zeos Pantera 90	4	7	86	80	71/75	\$2995	Pentium-90	16	720	ISA, PCI
6	⬅	Dell OptiPlex XMT 590	6	2	86	82	78/81	\$4167	Pentium-90	16	1080	ISA, PCI
7	➡	Acer AcerPower MiniTower	—	1	85	80	79/68	\$3295	Pentium-90	16	730	ISA, PCI
8	➡	Tagram Thunderbolt XL	—	1	85	86	¹	\$2939	Pentium-90	16	540	ISA, PCI ³
9	⬇	Quantex P-90 Pentium 90	5	4	85	76	73/78	\$2828	Pentium-90	16	540	ISA, PCI
10	➡	DFI Diamond P90	—	1	85	84	¹	\$3849	Pentium-90	16	1080	ISA, PCI ³
11	⬆	Robotech Cobra RSp90	13	2	84	84	¹	\$3331	Pentium-90	16	730	ISA, PCI
12	⬆	Midwest Micro Elite P590	20	2	83	84	¹	\$3465	Pentium-90	16	550	ISA, PCI
13	➡	AT&T Globalyst 600	—	1	82	75	87/76	\$4602	Pentium-90	16	540	ISA, PCI
14	⬇	Zeos Pantera 486 DX4	7	5	82	75	71/75	\$2695	DX4-100	16	720	ISA, PCI
15	⬇	Quantex QP5/60 PM-2	14	2	82	61	73/78	\$2398	Pentium-60	8	540	ISA, PCI
16	⬇	Austin P5-60	12	6	82	74	70/74	\$2957	Pentium-66	16	525	ISA, PCI
17	⬇	Zeos Pantera 60	11	3	82	66	71/75	\$2145	Pentium-60	8	530	ISA, PCI
18	⬇	Gateway P5-60	10	5	82	62	71/72	\$2349	Pentium-60	8	730	ISA, PCI
19	➡	USA Flex PT-90	—	1	82	73	69/72	\$2399	Pentium-90	8	700	ISA, PCI
20	⬇	Zeos Pantera PCI Tower	16	9	82	70	71/75	\$2895	Pentium-66	16	720	ISA, PCI

¹ Insufficient customer responses to gauge service performance and reliability. We base our evaluation on an average rating derived from all companies for which we have received fewer than 125 responses.

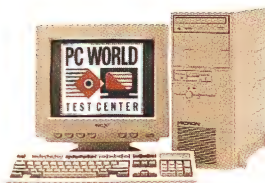
² Call 800/434-4495 (for payment by Visa or MasterCard) or 900/903-2972 (for telephone billing) and use the fax reprint numbers listed above to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and



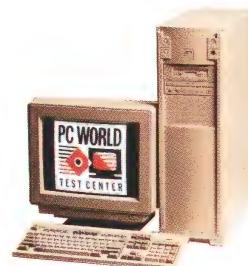
2 Austin P90
Great setup, 17-inch monitor.



3 Acma P90
Fastest ever, under \$3000.



4 Micron P90 Home MPC
Home unit does business.



5 Zeos Pantera 90
Power value under \$3000.

Monitor size/ dot pitch	Vendor contact number	Issue reviewed	Fax reprint number ²	Reader service no.	Comments
15"/.28	800/223-6571	current	3184	632	New version of successful system has great balance of performance, service, and features.
17"/.28	800/752-1577	Oct 94	3142	656	Excellent features and good performance are the standouts in this machine.
15"/.28	800/786-6888	current	3185	622	The fastest system we've ever tested—a solid blend of features and price. Has a built-in PCMCIA slot.
14"/.28	800/223-6571	Jan 95	3172	657	Home multimedia version of no. 1 Best Buy is slower and cheaper. Includes a modem.
15"/.28	800/554-5220	Aug 94	3123	658	Fast PC from the only company with four systems on the Power Top 20.
15"/.28	800/289-3355	Jan 95	3173	659	Great performance, reliability, service, and features, but at a high price.
15"/.28	800/368-2237	current	3186	621	Well-configured minitower would be a Best Buy if it were a few hundred dollars cheaper.
15"/.28	800/824-7267	current	3187	655	One of the fastest systems we've tested.
17"/.28	800/288-0566	Nov 94	3152	660	Nice, fast home system, but a touch slower than the no. 4 Micron.
17"/.26	800/275-3342	current	3188	629	Very fast, loaded home system.
15"/.28	800/255-2215	Jan 95	3174	661	Another very fast system, with a generous bundle of graphics software.
17"/.26	800/728-8582	Jan 95	3178	662	Very fast system, 17-inch monitor. Price cut moves it up chart.
15"/.28	800/872-4547	current	3189	624	Fantastic reliability and a PCMCIA slot, but rather pricey.
15"/.28	800/554-5220	Oct 94	3140	663	Highest ranked non-Pentium-90 system is loaded and very fast.
17"/.26	800/288-0566	Jan 95	3175	664	Slowest Top 20 power desktop system—a great buy for the home.
15"/.28	800/752-1577	Sept 94	3132	665	Very fast for a Pentium-66; has impressive lineup of components.
14"/.28	800/554-5220	Dec 94	3163	666	Low-cost system is also a Best Buy on the Budget chart.
15"/.28	800/846-2000	Oct 94	3144	667	Slow for a power system, but it has good features.
15"/.28	800/872-3539	current	3190	635	Inexpensive for a Pentium-90; would fit the power configuration better with more RAM.
15"/.28	800/554-5220	June 94	3091	668	Longest-lasting Top 20 power desktop system is a fine value.

test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in advance (\$9.95). Touch-tone phone required. ³ Also has VLB expansion slots.

For more information about all products in this table, circle reader service no. 904.

AT&T Globalyst 600

PC WORLD TOP 20
13 POWER DESKTOP

PROS: Superior reliability and service, PCMCIA slots
CONS: High price

With today's apps making increasingly heavy demands on processing power, hard-core business use—which often involves multimegabyte worksheets and databases—cries out for a Pentium-90. AT&T's compact Globalyst 600 is a solid performer, a well-designed, 90-MHz desktop workhorse with a PCMCIA Type III slot for portable modems, memory cards, and disk drives. At \$4602 on the street, the Globalyst 600 is no bargain-basement special, but every component spells quality: You get 16MB of RAM (128MB max), 256K of secondary cache, a 540MB hard drive, and an NEC CD-ROM drive.

Expandability is excellent, with two free SIMM sockets and three free drive bays (one externally accessible). You get plenty of free slots: two PCI, one PCI or 16-bit, and four 16-bit. Furthermore, a 15-inch monitor and a 2MB PCI graphics accelerator give you a potent graphics subsystem.

Support is strong, with a three-year warranty, a year's on-site service, 24-hour tech support—and top reliability, according to reader ratings. It speaks volumes when a PC as pricey as this makes a splash on our Power Desktops Top 20: Quality makes the difference. *AT&T Global Information Solutions, 800/872-4547, 818/442-0020* **Reader service no. 624**



AT&T

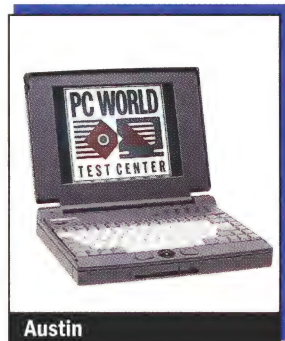
Austin Business Audio 4/75

PC WORLD TOP 20
4 BUDGET MOBILE PC

PROS: Fast performance, budget price, audio equipment
CONS: Hefty, one-year warranty, limited power management

There's already one Austin Business Audio notebook on our Mobile PCs Top 20. Reviewed last month, it parlayed a strong power configuration with an active-matrix color screen and fast DX4-75 performance into a power mobile Best Buy. This month's hefty 8.2-pound Business Audio notebook also comes with a 75-MHz DX4 CPU and is likewise a powerful performer, just slightly off its power sibling's pace. The \$2699 budget price might lead you to expect a second-class features set. Not so. You get 8MB of RAM, a 260MB hard drive, and a nice 9.5-inch dual-scan color display. Battery life is solid, at just under 4 hours.

The Austin's PCMCIA Type III slot alternatively accepts two Type II devices. The keyboard layout is close to standard, but the keys have unusually short travel, and the trackball is tiny. Power management lacks some features we've come to expect; for example, the unit doesn't suspend automatically when the case closes.



Austin

As its name suggests, this model also incorporates audio hardware and software, including an internal microphone and speakers as well as a clip-on mike, line-in/line-out jacks, and an external volume control (inconveniently hidden at the rear of the system). You get Microsoft Windows Sound System for recording and playing audio clips, and Cylogic Voice User enables the Austin Business Audio notebook to heed your spoken command.

The company's 24-hour tech support and 30-day money-back guarantee are good, even if the one-year warranty is run-of-the-mill. While this unit doesn't win a Best Buy, it does earn a ranking in the budget section of our Mobile PCs Top 20 chart. It's nice to know you can enjoy the power of a mobile DX4-75 at a budget price. The audio extras only add to the value. *Austin Direct, 800/752-1577, 512/339-3500* **Reader service no. 625**

Blackship Atlantis

PC WORLD TOP 20
4 BUDGET DESKTOP



PROS: Great price, good DX2-66 performance, multimedia and home-office features

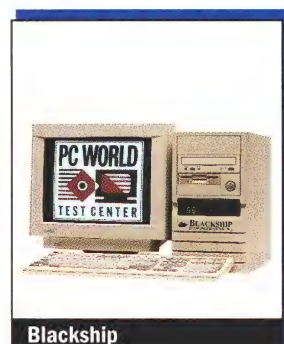
CONS: One-year warranty, crowded interior

Computing isn't just about crunching numbers and creating reports anymore. Today's PCs provide entrée to eye-catching video, ear-pleasing sound, and the surf of the Internet. With everything you need to plug in and turn on, this Blackship 486DX2-66 PC is also a media center for home or office. And at \$1695, it's a Budget Desktops Best Buy priced for bargain hunters.

This system's many components include an internal CD-ROM drive that's connected to a 16-bit SoundBlaster sound card. Blackship also throws in a stack of CD-ROM game and reference software and a pair of speakers. The Atlantis also comes with an internal 14.4-kbps fax-modem plus software and starter kits for America Online and CompuServe. The unit ships with 8MB of RAM (64MB max), 256K of secondary cache (512K max), a 540MB hard drive, a 15-inch monitor and a 1MB VL bus graphics accelerator. The Blackship completed our test suite noticeably faster than a typical 486DX2-66 PC.

Unfortunately, the system's design leaves much to be desired. The minitower chassis crawls with clone clutter. A tangle of cables and wires impedes access to slots and SIMMs. And the 16-bit sound board has to occupy the last available VL slot because it won't fit in the space left for ISA cards. Four free slots accept short 16-bit ISA cards *only*. Finally, there's no integrated manual; documentation is limited to a collection of component manuals.

Blackship offers just a one-year warranty; fortunately it's backed by on-site service. Toll-free tech support is available 10 hours a day, weekdays only. This is *not* a perfect system. You're making a clear trade-off, sacrificing excellence of design to get a complete multimedia and home office PC at a fantastic price. But taking everything into account, the Blackship Atlantis still winds up a striking value and a clear Best Buy. *Blackship Computer Systems, 800/531-7447, 408/432-7500* **Reader service no. 626**



Blackship

1995

FemmeNaturelle



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\$

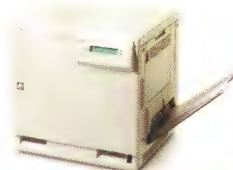


Tektronix

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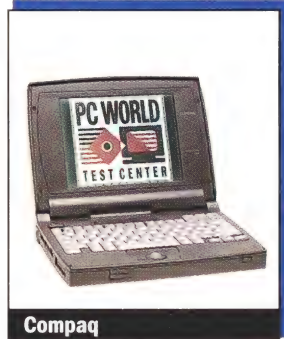
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Compaq Contura 400c

PROS: Superb service and support, great battery life

CONS: Poorly positioned on/off switch

A portable system's real distinction often lies in the details that take the pain out of computing on the run. With Compaq's Contura 400c notebook, the basics are all there: Priced at \$2879, this 486DX2-40 notebook performed up to the level of a typical DX2-50 mobile PC. And this system's 6.75-hour battery life is outstanding. The Contura 400c has 8MB of RAM (20MB max), a 250MB hard disk, and a bright, 9.5-inch dual-scan color display.



Compaq

But most notable are the Contura 400c's convenience and ease of use: Its 7-pound traveling weight is easy to shoulder, and the integrated AC adapter/battery charger means you never have to pack more than the power cord. The 400c comes with intuitive online documentation, plus other useful software. Nifty touches include a battery charge indicator at the top of the keyboard and graphical controls for setting screen brightness and contrast.

The Contura 400c accepts either one PCMCIA Type III or two Type II devices. Overall design is impressive: A front-and-center trackball has good roll resistance, and the keys have Compaq's typical quiet, short-travel action. Our one real complaint concerns the power button's placement directly above the escape key, where it invites inadvertent shutdowns.

Compaq's super service and support includes a three-year warranty and round-the-clock tech support. This unit's performance wasn't quite fast enough to earn it a place in the power section of our Mobile PCs chart, but the notebook provides excellent design and great support at a price barely above our budget limit. *Compaq Computer, 800/345-1518, 713/370-0670 Reader service no. 627*

DFI Diamond 66

PC WORLD TOP 20
16 BUDGET DESKTOP

PROS: Good price, fast for a DX2-66, multimedia setup

CONS: Toll call for weekday-only tech support

Home PC buyers used to look for a low price and just the basics. Now, even home PC buyers demand a solid array of multimedia features as well. The DFI Diamond 66 provides a nice option for users with a \$2000 limit. This \$1989 system provides quick DX2-66 performance and 8MB of RAM, 256K of secondary cache, a 540MB hard drive, a CD-ROM drive, a 16-bit sound card, and speakers. The video setup is solid as well: DFI's own 2MB 64-bit PCI graphics card matches up nicely with a 15-inch energy-saving monitor. DFI also provides a 2400/9600-bps fax-modem, adequate only for light communica-



DFI Diamond 66

tions. A stack of Microsoft CD-ROMs polishes off the deal: Encarta, Home, Works, Money, and Golf. Despite the messy interior cabling, expandability is fairly good, with three SIMM sockets, three drive bays, and one VL bus and three PCI slots all free.

DFI gives you a two-year warranty and a year of on-site service for \$58 (\$116 for two years). Not bad—although the brief five-day money-back guarantee and weekday-only toll-call tech support aren't up to snuff. We lack enough reader response to make a full reliability report on DFI. It speaks well for this DX2-66's strong performance and solid multimedia package that it overcomes these service shortfalls to gain a spot on our Budget Desktops Top 20. *DFI, 800/275-3342, 916/568-1234 Reader service no. 628*

DFI Diamond P90

PC WORLD TOP 20
10 POWER DESKTOP

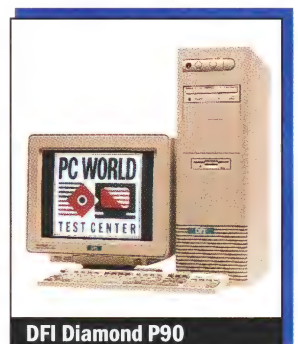
PROS: Fast performance, jumbo hard disk, multimedia and home office features **CONS:** Toll call for weekday-only tech support, somewhat pricey

DFI's \$3849 Diamond P90 is a very high performance Pentium-90. With its CD-ROM drive, sound board, speakers, and modem, it would make a great addition to a home office.

There's nothing lacking in the basic configuration: You get 16MB of RAM (128MB max), 256K of secondary cache, and a massive 1080MB hard drive. The list goes on, with a Mitsumi CD-ROM drive, a 16-bit Media-Magic sound board, a pair of desktop speakers, and a 14.4-kbps fax-modem. You also get a big 17-inch monitor and a 2MB PCI graphics board.

Inside the case, the Diamond P90's clean design leaves SIMM sockets, drive bays, and expansion slots in the clear. The large chassis can accept six drives, while one PCI slot, a single PCI or 16-bit slot, two 16-bit slots, and two SIMM sockets are free.

Support includes a two-year warranty. But the five-day money-back guarantee is shorter than most, on-site service costs extra, and worse, the weekday-only tech support requires a toll call. Still, the system is terrific, and it earns a solid Power Desktops Top 20 position. *DFI, 800/275-3342, 916/568-1234 Reader service no. 629*



DFI Diamond P90

Everex StepNote DX4-75

PROS: Speedy performance, fine display, modular design

CONS: Hard-to-use on/off switch, toll call for weekday-only tech support

If you compute on the go, good battery life is a must. When we reviewed Everex's StepNote DX4-75 last October, it came up short in this department. Everex has improved this quick business-class notebook, however, more than doubling battery life to an ample 4.5-plus hours.

The configuration on this \$3671 PC isn't as pumped as those of many elite power notebooks. The 8MB of RAM with a 20MB upper limit isn't atypical, but many top power mobile PCs now sport hard drives larger than the Everex's 255MB unit. You get 12-bit integrated sound, a 9.5-inch active-matrix color screen, and

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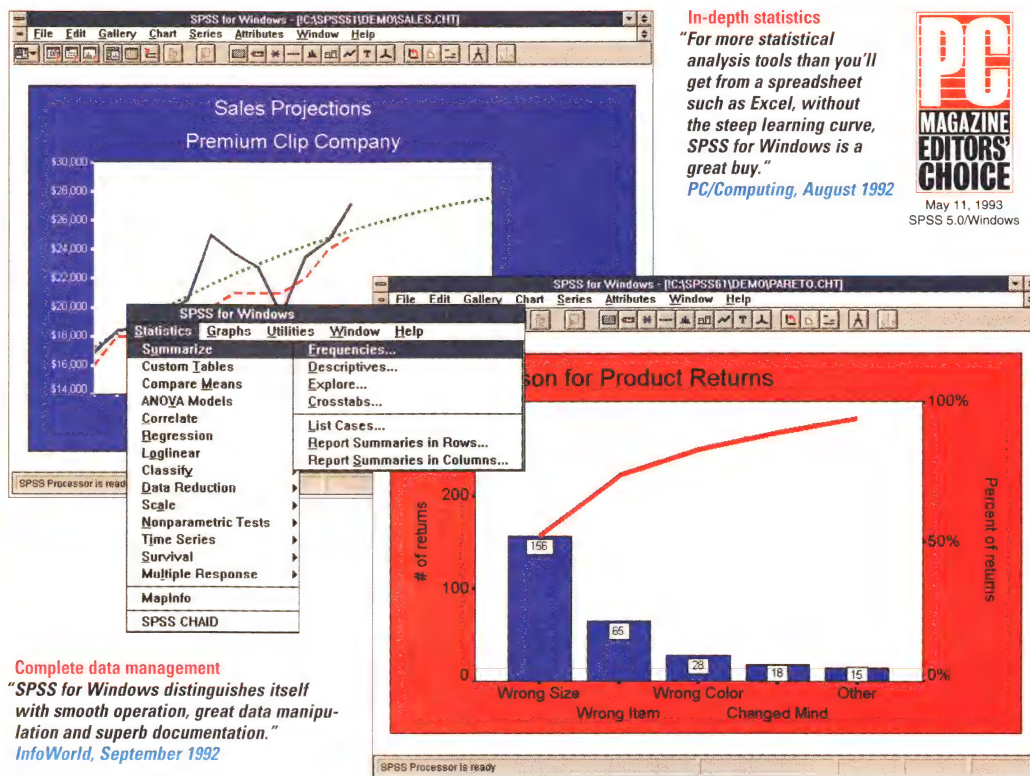
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're kidding me" scores ever recorded.



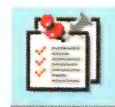
The Timex Data Link watch can actually read your personal information right from your computer screen.

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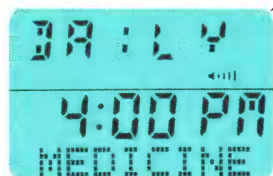
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THE TOP 20

PC WORLD

BUDGET DESKTOPS



1 MIS Slimline 66
Rock-bottom basic DX2-66.

➤ New this month ➤ No change from last month
▲ Up from last month ▼ Down from last month

BEST BUYS

BEST BUYS			Last month	Months on chart	Overall rating	Performance rating	Reliability/ service rating	Price	CPU	RAM (MB)	Hard drive (MB)	Bus slots
1	➡	MIS Slimline 66	—	1	83	50	85/89	\$1660	486DX2-66	8	420	ISA, VLB
2	⬇	Zeos Pantera DX2-66	1	3	82	55	71/75	\$1845	486DX2-66	8	530	ISA, PCI
3	⬆	Zeos Pantera 60	5	3	82	66	71/75	\$2145	Pentium-60	8	530	ISA, PCI
4	➡	Blackship Atlantis	—	1	81	45	71/69	\$1695	486DX2-66	8	540	ISA, VLB
5	⬇	Micron 4100PCI Magnum	2	5	81	62	70/85	\$2049	DX4-100	8	420	ISA, VLB
6	⬆	Quantex QP5/60W-2	8	3	80	63	73/78	\$2215	Pentium-60	16	540	ISA, PCI
7	⬆	Gateway P4D-66	10	9	80	46	71/72	\$1949	486DX2-66	8	730	ISA, PCI
8	➡	MIS M5P/60	129	1	80	52	85/89	\$2250	Pentium-60	8	270	ISA, PCI
9	➡	Polywell Poly 486-80VB	—	1	80	63	¹	\$1901	Am486DX2-80	8	540	ISA, VLB
10	⬇	VTech Platinum 486DX2/66 Dual	7	3	79	49	71/59	\$1859	486DX2-66	16	500	ISA, VLB
11	⬇	VTech Expo 486DX2-66	9	3	79	46	71/59	\$1489	486DX2-66	8	540	ISA, VLB
12	⬇	Gateway 2000 Family PC 4DX2-66	11	2	79	44	71/72	\$1899	486DX2-66	8	730	ISA, PCI
13	⬇	Intelesys IN586/60	4	3	78	58	¹	\$1850	Pentium-60	8	430	ISA, PCI
14	⬆	MIS M466 PCI	30	3	78	36	85/89	\$1540	486DX2-66	8	270	ISA, PCI
15	⬆	USA Flex Pentium 60MHz System	22	2	78	60	69/72	\$2128	Pentium-60	8	425	ISA, PCI
16	➡	DFI Diamond 66	—	1	78	50	¹	\$1989	486DX2-66	8	540	ISA, PCI
17	⬇	Acma P60	15	2	78	64	79/70	\$2082	Pentium-60	8	420	ISA, PCI
18	⬇	AST Premmia MX 41100T	12	3	78	54	79/72	\$1969	DX4-100	8	270	ISA, PCI
19	⬆	Polywell Poly 560MPC	23	1	77	65	¹	\$2250	Pentium-60	8	550	ISA, VLB
20	⬆	Netis 566 PCI	21	3	77	71	¹	\$2225	Pentium-66	8	540	ISA, PCI

¹ Insufficient customer responses to gauge service performance and reliability. We base our evaluation on an average rating derived from all companies for which we have received fewer than 125 responses.

² Call 800/434-4495 (for payment by Visa or MasterCard) or 900/903-2972 (for telephone billing) and use the fax reprint numbers listed above to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and test



2 Zeos Pantera DX2-66
Solid setup for \$1845.



3 Zeos Pantera 60
Quick Pentium-60.



4 Blackship Atlantis
DX2-66 multimedia—cheap.



5 Micron 4100PCI Magnum
Quick basic budget DX4-100.

Monitor size/ dot pitch	Vendor contact number	Issue reviewed	Fax reprint number ²	Reader service no.	Comments
15"/.28	800/733-9188	current	3191	633	Low-cost desktop jumps in at no. 1. Scant reliability and service data, but what's there is very good.
14"/.28	800/554-5220	Dec 94	3167	669	Fast for a DX2-66, member of the esteemed Zeos Pantera line, just edged from last month's no. 1 slot.
14"/.28	800/554-5220	Dec 94	3163	666	Fastest budget Best Buy is a great value too. Also on Power chart.
15"/.28	800/531-7447	current	3192	626	Low-cost home multimedia PC with modem. Accepts short expansion cards only.
14"/.28	800/223-6571	Aug 94	3125	671	Good blend of speed and low price results in a Best Buy.
15"/.28	800/288-0566	Dec 94	3164	672	Multimedia system is fast and just fits under our new \$2250 budget desktop price limit.
15"/.28	800/846-2000	June 94	3096	673	A Top 20 regular for nine months. Its most notable feature is a huge hard drive.
15"/.28	800/733-9188	Sept 94	3193	674	Price drop makes this decent system eligible for the Budget list. Has skimpy hard drive.
14"/.28	800/999-1278	current	3194	634	System with new AMD DX2-80 CPU performs as ably as many Pentium-60s. Great price.
15"/.28	800/815-0070	June 94	3102	675	Can accept second processor to boost multiprocessing systems like Windows NT. Low service rating.
15"/.28	800/815-0070	Dec 94	3168	676	Ultra-inexpensive multimedia PC (cheapest on list). It has no free SIMM sockets, and service rating's low.
14"/.28	800/846-2000	Jan 95	3180	677	Home version of the Gateway P4D-66; comes with a modem and a multimedia configuration.
14"/.28	800/577-2486	Dec 94	3169	678	Low-cost Pentium in a basic office configuration.
14"/.29	800/733-9188	July 94	3195	679	Huge price drop takes very slow system onto Top 20 list.
15"/.28	800/872-3539	Nov 94	3196	680	Big price cut moves basic Pentium-60 onto Budget Desktops Top 20.
15"/.28	800/275-3342	current	3197	628	Solid home PC with healthy performance and configuration.
15"/.28	800/786-6888	Nov 94	3183	681	Low-cost system has decent performance for a budget Pentium.
15"/.28	800/876-4278	Oct 94	3181	682	Well designed, but needs a larger hard drive.
14"/.28	800/999-1278	Jan 95	3198	683	Basic Pentium just makes budget cutoff.
15"/.28	800/577-7526	Nov 94	3199	684	Fastest machine on Budget Top 20.

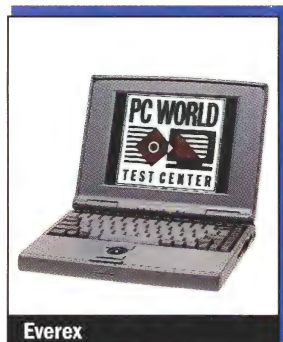
report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in advance (\$9.95). Touch-tone phone required.

For more information about all products in this table, circle reader service no. 905.

local bus video. The display is brilliant, even under strong lights, and you can plug in an external monitor for a 256-color 1024 by 768 display. The system's PCMCIA slot accepts either a Type III device or a pair of Type II cards. Furthermore, the StepNote's improved modular design makes owner upgrades and notebook sharing a snap. If you want to share the system with an office mate, an extra 255MB hard drive costs a reasonable \$270.

The StepNote is well decked out for travel, weighing just 7.6 pounds. Though the flat keys click more loudly than usual, we found them—and the marble-size trackball—comfortable to use. We were annoyed by the idiosyncratic on/off setup, however: You have to press two keys to switch the notebook on and then press three keys to turn it off.

Everex's warranty covers you for two years. Tech support is available for 10 hours each workday, but you pay the toll. If that deficiency doesn't deter you, the StepNote DX4-75's long battery life, quick performance, and upgrade-friendly design make it a promising travel companion. *Everex Systems*, 800/821-0806, 510/498-1111 **Reader service no. 630**



Intelesys P54C90

PROS: Reasonable price, multimedia configuration

CONS: So-so performance for a Pentium-90

Looking at this tall Pentium-90 tower's vital statistics, you may wonder why it didn't measure up to our Power Desktops Top 20. Granted, it's not a performance star, but this generally quick unit's grades on our benchmarks didn't dip far below our Pentium-90 class average. The configuration is attractive for \$2624: You get 8MB of RAM (128MB max), 256K of secondary cache, a 545MB hard drive, a CD-ROM drive, a 16-bit SoundPlus sound card, a microphone, and speakers. Display duties are handled adequately by a 15-inch monitor and a 1MB Diamond Stealth 32-bit PCI graphics accelerator. To put the ribbon on the package,



Intelesys includes a 14.4-kbps fax-modem with software. Drive expandability is great, with five bays free. In addition, you have one PCI, one 16-bit or PCI, and two 16-bit slots free.

Intelesys provides 24-hour tech support for one year. Subsequently, support is available 8.5 hours a day, weekdays only. The company covers all repairs on-site for the first year and parts only for two more years. This unit doesn't quite hit the mark in either desktop Top 20 contest, lacking the unbridled speed and super configuration of winning power PCs and the low price of a budget box. Still, this multimedia unit provides a good compromise, with a fair Pentium-90 price and solid features. *Intelligent Computers and Technologies*, 800/577-2486, 510/226-6300 **Reader service no. 631**

Micron P90PCI PowerStation

PC WORLD TOP 20
1 POWER DESKTOP



PROS: Blazing speed, huge hard disk

CONS: One-year warranty

Micron systems have a knack for playing king of the hill on our Top 20 charts, which takes delivering top features, performance, and value. This new PC replaces the system of the same name that's been entrenched on our Power Desktops Top 20 since August. It also takes over the top spot as the number one power desktop. This new Best Buy Pentium-90 has 16MB of RAM (192MB max), a hefty 512K secondary cache, and a massive 1080MB hard drive. Performance is close to the best we've ever seen. Results on the Excel, Freelance, and both of our Paradox tests were particularly outstanding.

Micron doesn't scrimp on the other features power users typically demand: The hefty configuration includes a proprietary-interface Mitsumi CD-ROM drive and a high-quality flat-



screen 15-inch Mag monitor paired with Diamond's quick Stealth 64 PCI video card with 2MB of VRAM. What's the price for this red-hot package? An eminently reasonable \$3398.

If you plan to pile in more peripherals, this compact box has plenty of room. Micron engineers thoughtfully bundle the cabling to reduce clutter and give unhindered access to all components on the motherboard. The three free drive bays and four empty SIMM sockets are easy to reach. And you can expand further using the free slots: three 16-bit, one PCI, and one 16-bit or PCI.

Micron's one-year warranty is nothing special, although it is backed by on-site service. Toll-free tech support is available 13 hours on weekdays and 9 hours on Saturdays. Based on responses to our monthly survey, Micron's reliability is average, but service scores an extraordinarily high satisfaction rating. Power desktop buyers are always looking for the best. For our money, they can't go wrong with the majestic Micron P90PCI PowerStation, our new Best Buy power system and king of the desktops. *Micron Computers*, 800/223-6571, 208/465-3434 **Reader service no. 632**

MIS Slimline 66

PC WORLD TOP 20
1 BUDGET DESKTOP

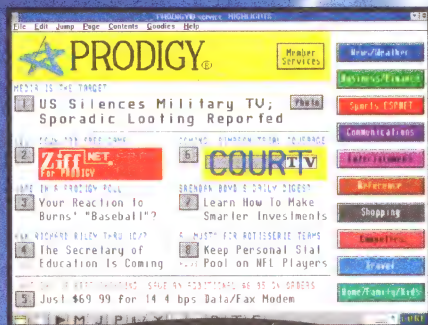


PROS: Excellent price, fast DX2-66 performance

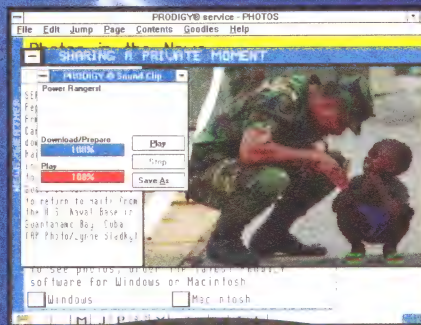
CONS: One-year warranty, no weekend technical support available

Not everyone can afford—or needs—a high-priced powerhouse with all the bells and whistles. Buyers who want a bare-bones machine often feel like diving into the nearest foxhole when confronted with some vendors' heavy promotional firepower. Fortunately, MIS has come up with a simple answer for these buyers: The budget Best Buy MIS Slimline 66. This is a no-frills DX2-66 service unit—a starter model that comes with the basics, and just the basics: 8MB of RAM (64MB max), 256K of secondary cache, and a 420MB IDE hard drive. The price? A mere \$1660. That's a very affordable ticket for fully capable Windows equipment. Note

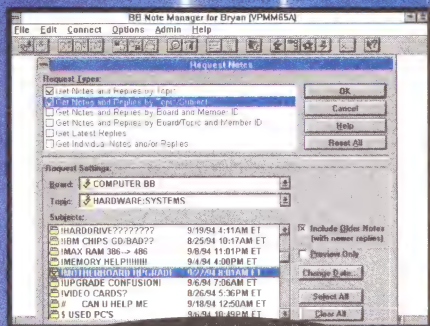
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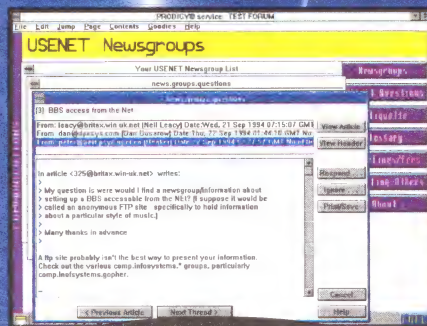
New Look and Feel



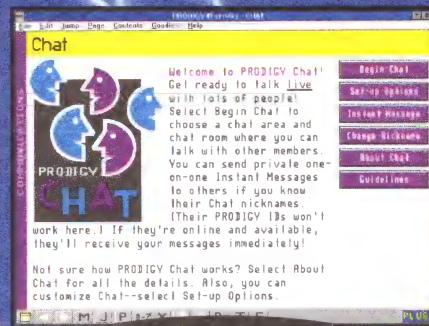
Pull Down Photos



Power Tools



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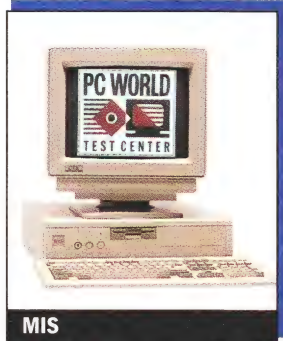
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that MIS didn't skimp on the display: The 15-inch monitor is a solid choice for most Windows applications, and it's matched up with a 1MB VL graphics card. Of course, you'll have to upgrade the machine if you want to enjoy multimedia, CD-ROM applications, access to online services, or fax capability.

Fortunately, the spartan Slimline 66 provides room for upgrades, with three free externally accessible drive bays, three free 16-bit ISA slots, a free VL bus slot, and a pair of unoccupied SIMM sockets. Upgraders will be pleased to find unobstructed access to all components. And performance is good: In our tests, this ultra-basic PC showed very quick DX2-66 performance.

MIS offers a minimal one-year warranty; but on-site service is a nominal \$25. You do get a longer-than-usual 45-day money-back guarantee, but toll-free tech support excludes weekends and is available just 10 hours daily. MIS is a small company, and we don't have a large volume of reader feedback on reliability and service. Gathered responses, however, strongly indicate high reliability. Furthermore, an overwhelming number of MIS respondents are satisfied with the way their problems have been handled. It's nice to see simple virtues triumph: That's the story on the MIS Slimline 66, a machine that parlayed a fantastic price on a nimble basic business PC into a number one budget desktop Best Buy. *MIS*, 800/733-9188, 510/226-9188 **Reader service no. 633**



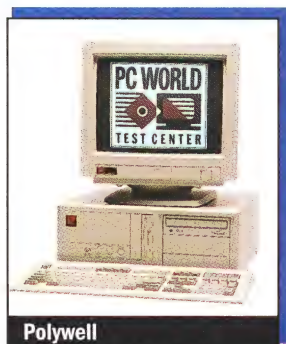
Polywell Poly 486-80VB

PC WORLD TOP 20
9 BUDGET DESKTOP

PROS: Power performance at a budget price
CONS: 14-inch monitor

We were eager to take a look at Polywell's new Poly 486-80VB, since it's one of the first AMD Am486DX2-80 machines available. We weren't at all disappointed. The 80-MHz CPU looks like a hot performer. If test results from this Polywell are representative, budget business systems powered by DX2-80s could very well run neck and neck with Pentium-60 PCs—as this one did. At press time, both AMD and Polywell reported supply problems on the new AMD CPU, but by the time you read this, supply should be available.

We couldn't help but love this unit's \$1901 price. The low ticket buys 8MB of RAM (64MB max), 256K of secondary cache (512K max), and a 540MB hard drive. We do like a 15-inch monitor, even on a budget box. At this price, Polywell gives you only a 14-inch display. Fortunately, you



can buy this model with the larger monitor for just \$115 extra. The 2MB VL bus graphics adapter can handle the larger display with ease. You get a CD-ROM drive, but a sound card or speakers will also cost you some extra dough.

The compact Poly 486-80VB holds three free drive bays, one free VL bus slot, and four free 16-bit slots; three of four SIMM sockets are unoccupied. Polywell's unique warranty covers parts for two years and labor for five. Toll-free tech support is available six days a week. We need more reader response to rate Polywell reliability; of the reports we have received, few are negative. The Poly 486-80VB is a super offering, with fine performance, a good-size hard drive, and a CD-ROM drive, all at a near-irresistible price. If you think that combination ensures a solid position on our Budget Desktops Top 20, you're right on the money. *Polywell Computers*, 800/999-1278, 415/583-7222 **Reader service no. 634**

Tagram Thunderbolt XL

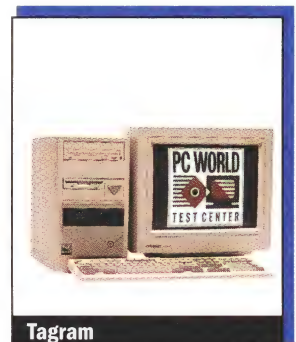
PC WORLD TOP 20
8 POWER DESKTOP

PROS: Awesome speed, quadruple-speed CD-ROM drive, three-year warranty
CONS: Interior somewhat crowded

Tagram's Thunderbolt XL appears to be aptly named: This Pentium-90 minitower shot through our benchmarks almost as speedily as the fastest PC we've tested. And the Thunderbolt's memory configuration spells power all the way, with 16MB of RAM and an unusually large 1MB secondary cache. You also get a 540MB Maxtor hard drive and a Teac quadruple-speed CD-ROM drive with a proprietary interface (but no sound card or speakers).

The video setup includes a 2MB ATI Winturbo 64-bit PCI graphics card and a 15-inch monitor. Inside the Thunderbolt XL's minitower case, you'll find an increasingly common motherboard setup with VLB, PCI, and ISA slots. Two VLB slots, a PCI slot, and an 8-bit ISA slot are available, along with another that takes either a 16-bit or a PCI card. Two externally accessible drive bays are also free.

Tagram provides an excellent three-year warranty, a 30-day money-back guarantee, and a 1-day turnaround policy on factory repairs. Support lines remain open 9 hours a day during the week and 4 hours on Saturdays. We have not received enough responses about Tagram service and reliability on our monthly reader survey to report meaningful results, but adding everything up, the \$2939 price on this system seems highly reasonable. The Thunderbolt XL is a fine buy and a solid Power Desktops Top 20 system. *Tagram System*, 800/824-7267, 714/258-3222 **Reader service no. 655**



USA Flex PT-90

PC WORLD TOP 20
19 POWER DESKTOP

PROS: Low price, bundled fax-modem
CONS: One-year warranty

When Pentiums first appeared on the desktop, buyers were paying a premium—upwards of \$4000 for a basic 60-MHz model with no extras. Now we're seeing a number of Pentium-90s for under \$2500. Take the compact \$2399 USA Flex PT-90 system, which comes with 8MB of RAM expandable to 128MB, 256K of secondary cache, a very respectable 700MB hard drive, a 1MB 32-bit PCI graphics board, a 15-inch monitor, a 14.4-

THE TOP 20

PC WORLD

MOBILE PCs



1 Compaq LTE Elite
Quick luxury model.

➤ New this month ➤ No change from last month
▲ Up from last month ▼ Down from last month

POWER SYSTEMS

		Last month	Months on chart	Overall rating	Performance rating	Reliability/service rating	Price	CPU	RAM (MB)	Hard drive (MB)
1	➤	1	5	92	37	83/89	\$5429	DX4-75	8	340
2	▲	4	2	89	40	72/67	\$3749	DX4-75	8	340
3	➤	—	1	89	45	67/82	\$3295	DX4-100	8	340
4	▲	7	3	87	54	72/67	\$4799	DX4-100	16	500
5	▲	6	3	87	34	¹	\$3999	DX4-75	8	520
6	▲	8	2	86	30	69/82	\$3349	486DX2-50	8	520
7	▼	5	5	86	35	66/72	\$5929	DX4-75	8	510
8	▼	3	4	85	42	69/78	\$4250	DX4-75	8	340
9	▼	2	4	85	32	80/80	\$4199	486DX2-50	8	250
10	▲	11	1	85	51	¹	\$4795	DX4-100	16	525

BUDGET SYSTEMS

1	➤	—	1	89	28	¹	\$2259	486DX2-50	8	255
2	➤	—	1	84	37	¹	\$2359	DX4-75	8	125
3	➤	—	1	83	29	67/82	\$2258	CxDX2-50	8	200
4	➤	—	1	82	36	72/67	\$2699	DX4-75	8	260
5	▲	8	2	82	29	¹	\$2705	DX4-100	4	340
6	➤	6	3	82	26	74/83	\$2710	486SX-33	8	170
7	▼	5	3	82	28	¹	\$2149	486DX2-50	8	250
8	▼	7	4	81	28	¹	\$2749	486DX2-50	8	340
9	▼	1	9	81	22	80/78	\$1299	486SX-33	8	120
10	▼	4	7	79	21	62/85	\$1499	486DX2-40	8	130

Best Buy

¹ Insufficient customer responses to gauge service performance and reliability. We base our evaluation on an average rating derived from all companies for which we have received fewer than 125 responses. ² CA = color active, CD = color dual-scan, CP = color passive, MP = mono passive.

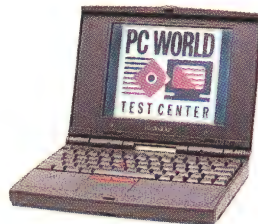
³ Call 800/434-4495 (for payment by Visa or MasterCard) or 900/903-2972 (for telephone billing) and use the fax reprint numbers listed above to order fax



2 Austin Business Audio Notebook
Hot DX4-75 features sound.



1 WinBook XP DX2/50
Solid mono economy model.



2 WinBook XP DX4/75
Fast bargain color notebook.

Weight (pounds)	Battery life (hours)	Screen type/size ²	Vendor contact number	Issue reviewed	Fax reprint number ³	Reader service no.	Comments
7.2	6:32	CA/9.5"	800/345-1518	Oct 94	3650	685	Fifth month at the top. Has it all: speed, battery life, portability, features.
8.6	3:16	CA/9.5"	800/752-1577	Jan 95	3667	686	Good all-rounder with great sound and voice applications.
7.8	4:13	CD/10.3"	800/554-5220	current	3171	639	Big screen; cheapest in the power section of the Mobile PCs Top 20.
8.4	3:08	CA/9.4"	800/752-1577	Dec 94	3661	687	Fastest notebook; good audio. With this much RAM, a great desktop replacement.
7.4	4:26	CA/9.4"	800/468-1242	Dec 94	3660	688	Loaded; fine display; 14.4-kbps fax-modem.
7	3:13	CD/9.5"	800/613-3355	Jan 95	3668	689	Slowest power notebook but solid design and features.
8.2	6:44	CA/10.4"	800/876-4278	Oct 94	3651	690	Quality screen and long battery life, but most expensive notebook on Power list.
7.5	3:35	CA/8.5"	800/527-3500	Nov 94	3654	691	Good sound; multimedia docking station option.
6.2	6:48	CA/8.4"	800/334-3445	Nov 94	3653	692	Subnote with excellent battery life. Hard drive could be bigger.
8.6	2:23	CA/9.4"	800/633-1925	Jan 95	3172	693	Fast, super screen, and lots of RAM, but poor battery life.
6.8	6:45	MP/9.5"	800/468-2162	current	3173	636	Fine basic mono notebook with great battery life, low price.
7	5:39	CD/9.4"	800/468-2162	current	3174	637	Fastest budget notebook, basic color, good battery, small hard drive.
6.8	3:09	CP/9.5"	800/533-0331	current	3175	638	Modular notebook has a solid design and an optional multimedia kit.
8.2	3:57	CD/9.5"	800/752-1577	current	3176	625	Very fast budget notebook with audio features.
7.6	3:55	CD/9.5"	800/872-4547	Jan 95	3670	694	Surprisingly slow but inexpensive notebook.
7	4:45	CD/9.4"	800/637-2600	Dec 94	3665	695	Very nicely designed notebook, but needs a larger hard drive.
6.8	5:12	CD/7.8"	909/595-6146	Dec 94	3664	696	Low-cost, lightweight notebook, but the screen is small.
7.4	5:21	CD/9.5"	800/995-8946	Nov 94	3659	697	Good traveler's notebook with a decent screen.
5.8	6:31	MP/8.5"	800/334-3445	June 94	3627	698	Low-cost mono subnote, but it's slow.
5	5:06	MP/7.8"	800/846-2000	Aug 94	3646	699	Similar to Toshiba above, but it costs slightly more, and it's a bit slower.

copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in advance (\$9.95). Touch-tone phone required.

For more information about all products in this table, circle reader service no. 906.

kbps fax-modem, and communications and fax software. Five drive bays are free, as are two SIMM sockets, one PCI slot, a 16-bit or PCI slot, and three 16-bit slots. USA Flex support is mostly



USA Flex

basic fare. A minimal one-year warranty is augmented by a year of on-site service. Around-the-clock toll-free tech support, however, is a solid comfort. Readers rating USA Flex on our Reliability and Service Monitor report a better-than-average level of problem resolution, and the company's reliability rates a bit above average. Overall, this Pentium-90 system adds up to a very good

value, and it earns a position on our Power Desktops Top 20 chart. USA Flex, 800/872-3539, 708/351-9700 **Reader service no. 635**

WinBook XP DX2/50



PROS: Exceptional battery life, fast, lightweight, low price, modular design

CONS: No battery hot-swap, one-year warranty

If you want a lightweight monochrome traveling companion for a rock-bottom price, the Best Buy WinBook XP DX2/50 is the notebook for you. This unit combines excellent battery life and decent DX2-50 performance with a \$2259 price that's hard to beat. You get a light, solidly configured system with 8MB of RAM, a 255MB hard drive, and a 14.4-kbps fax-modem bundled with fax and communications software. All of this weighs a mere 6.8 pounds.

While this unit's 9.5-inch monochrome display won't give you color on the road, you can plug in a color monitor at home or in the office and get up to 64,000 colors at 640 by 480 resolution. And the WinBook XP DX2/50's battery pack will keep you computing for a long 6.75 hours. Unfortunately, you can't swap in a second battery with the system turned on.

The keyboard is comfortable, with big keys and a broad wrist rest. You have your choice of pointing device, as WinBook configured this unit with both a pointing-stick device and a dual-button trackball. The PCMCIA cover is removable for easy installation of two Type II devices or a single Type III card. Unfortunately, this design also makes it easy to lose the removable cover.

WinBook's standard one-year warranty is backed by 11 hours of toll-free technical support on weekdays plus 7 hours on Saturdays. As is the case with many notebook vendors whose products appear in our reviews, we need more reader response to gauge WinBook reliability. System documentation is excellent. Finally, the unit's modular design allows for easy replacement and upgrading of components. Adding up all the high points, we come up with a fantastic value and a number one budget mobile Best Buy. WinBook Computer, 800/468-2162 **Reader service no. 636**



WinBook XP DX2/50

WinBook XP DX4/75



PROS: Quick performance, low price, lightweight, long battery life

CONS: Standard hard drive undersized for use

with Windows, no battery hot-swap, one-year warranty

Identical in many respects to its monochrome DX2-50 mobile sibling (including its Best Buy rating), the WinBook XP DX4/75 differs in a few important particulars. For one, this DX4-75 system is far faster. With 8MB of RAM (32MB max) and a 32-bit local bus graphics accelerator, this unit rates among the quicker mobile DX4-75s we've reviewed. And like its DX2-50 sibling, the 7-pound WinBook won't leave you feeling like a beast of burden. But the best news is the sweet \$2359 price.

Did WinBook cut corners to keep the price down on this DX4-75 dual-scan color notebook? Frankly, yes. You get an undersized 125MB hard drive, and there's no fax-modem. With the 255MB hard drive that most business Windows users demand these days, this model costs \$2719—barely within our budget limit of \$2750. On the other hand, if the lower price is what you can afford right now, the WinBook's modular design makes upgrading later on an easy process.

When it comes to ergonomic features, PCMCIA configuration, and support policies, this unit almost mirrors the DX2-50 WinBook. With this model, however, you get just the pointing-stick device. If you want the built-in dual-button trackball too, you'll pay \$30 extra. Though this color model uses more juice than its monochrome sibling, you can still expect more than 5.5 hours of battery life. As with the DX2-50 model, you can't hot-swap in a new battery.

Even accounting for the small hard disk, this budget Best Buy color DX4-75 notebook is a super value and provides bargain entrée to power mobile performance. WinBook Computer, 800/468-2162 **Reader service no. 637**



WinBook XP DX4/75

ZDS Z-Star EX



PROS: Modular design, three-year warranty

CONS: Top hard drive option is just 340MB, no weekend tech support

Zenith Data Systems notebooks have a lot of fans, and why not? ZDS units tend to be well designed, and customers have the security of buying from an established company that has a solid reputation. ZDS's \$2258 Z-Star EX is an excellent budget notebook and a credit to its manufacturer. You may find this 6.8-pound notebook with the Cyrix CxDX2-50 CPU (as tested), or you may see it with an Intel 486DX2-50 chip. The Z-Star EX that we tested posted solid benchmark results for a notebook of its CPU class. This unit comes with 8MB of RAM and a just-adequate 200MB hard drive. You can order the computer with a larger hard drive, but 340MB is the largest available option. The system's 9.5-inch passive color screen is a budget basic.

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"Best overall performance" (Soft & Micro Magazine, France).

"One of the best monitors...bright, sharp display and excellent colors" (Windows Magazine, Sept. '94). *"Symbol of Excellence Award"* (CETDC/ Business Week Asia, Taiwan).

"Best Display Products" (Computex/Byte, Taiwan).

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*Official 1993 Monitrak U.S. monitor sales research.

Circle 74 on reader service card

A cowboy in a red shirt and tan hat is being thrown from a bucking horse in a rodeo arena. The horse is white with brown spots and is rearing up. The cowboy is in mid-air, having lost his seat. The arena has a white fence and a dirt floor. The scene is lit with warm, golden light, suggesting sunset or sunrise.

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everything in Texas
comes easy.
But our printers do.

You won't get thrown by a TI printer. Our family of friendly printers extends your reach – without extending your budget.

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Easy to own. Our printers have the friendliest prices around. We even offer a 30-day risk-free trial* to make sure you're perfectly satisfied.



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All prices are estimated street prices. Dealer prices may vary. *Offer applies to all new microMarc, microWriter, microLaser, and 8920 Forms printers, if returned in good condition. microMarc, microWriter, microLaser, Color Magic, and "Extending Your Reach" are trademarks of Texas Instruments Incorporated. OS/2 is a registered trademark of IBM, Corp. Mac is a registered trademark of Apple Computer, Inc. Adobe, PostScript, Adobe Memory Booster, and the PostScript logo are registered trademarks of Adobe Systems, Inc. Windows is a registered trademark of Microsoft Corporation. PCL is a trademark of Hewlett-Packard, Inc. © 1994 TI



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This flexible color/black and white inkjet printer adds vivid color to your work. Windows™/DOS compatible.



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An entry-level, laser-quality printer for small businesses and home users. 300 dpi, 5 pages per minute. Windows/DOS compatible. Add 23 Scalable fonts and Mac™ compatibility on our PS23 model. Now under \$700.



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Laser-quality printer for the business professional looking for "personal" 600 dpi PostScript printing. 5 pages per minute, Adobe Memory Booster. Mac/Windows/DOS compatible.



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A feature packed, high performance 600 dpi printer. 8 pages per minute, 3 MB memory, two 250-sheet paper trays. Mac/Windows/DOS compatible. Optional multi-network interface now available.



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Ideal for volume intensive small work groups. 12 pages per minute, 600 dpi, Adobe Memory Booster™. Mac/Windows/DOS compatible. Optional multi-network interface now available.



12ppm microLaser PowerPro Printer
Under \$1,750.

Ideal for heavy graphics printing. 12 pages per minute, a turbo-charged processor, 600 dpi, 67 scalable fonts. Mac/Windows/DOS compatible. Optional multi-network interface now available.



8920 Forms Printer
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A heavy duty dot matrix printer for up to 9-part business forms. Adjustable 18-pin printhead, five print speeds, zero tear-off for form waste elimination. Windows/DOS compatible.



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**TEXAS
INSTRUMENTS**

Circle 244 on reader service card

FEATURES COMPARISON: THIS MONTH'S CONTENDERS—DESKTOPS

New AMD and Cyrix 486DX2-80 CPUs Show Up in Budget-Price PCs

● Yes

○ No

n/a = not applicable

Standard features

	BEST BUY Acer AcerPower Minitower	BEST BUY Acma P90	BEST BUY PC DX Alaris EnergySmart	BEST BUY AT&T Globelyst 600	BEST BUY Blackship Atlantis	DFI Diamond 66	DFI Diamond P90	Intelsys P54C30
Street price as of 11/1/94 ¹	\$3295	\$2999	\$1785	\$4602	\$1695	\$1989	\$3849	\$2624
CPU	Pentium-90	Pentium-90	Cx486DX2-80	Pentium-90	486DX2-66	486DX2-66	Pentium-90	Pentium-90
CPU or upgrade socket	296-pin ZIF	238-pin ZIF	238-pin ZIF	238-pin ZIF	238-pin ZIF	238-pin ZIF	296-pin ZIF	296-pin ZIF
BIOS	Acer 2.0 1/1/94	AMI 1.00.08 AXI 7-22-AT	MR BIOS 2.00 9/11/94	AMI 1.00.03 FOB 7-22-94	Award 4.05G 7-26-94	Award 4.50G 8/4/94	AMI 1.00.06 AXI 11/11/92	AMI 8/23/94 1.00.10AX1
Installed/maximum RAM (MB)	16/128	16/128	8/128	16/128	8/64	8/64	16/128	8/128
30-pin or 72-pin SIMMs	72-pin	72-pin	72-pin	72-pin	72-pin	72-pin	72-pin	72-pin
SIMM sockets/number free	4/2	4/2	4/3	4/2	4/2	4/3	4/2	4/2
Secondary RAM cache installed/ maximum (K)	256/256	256/256	256/1024	256/256	256/512	256/512	256/256	256/256
Case style	minitower	minitower	compact	compact	minitower	compact	tower	tower
Free externally accessible 3 1/2-inch/ 5 1/4-inch drive bays	1/2	0/2	1/3	0/1	1/1	0/1	0/3	1/2
Free internal 3 1/2/5 1/4-inch drive bays	1/0	0/0	1/0	2/0	1/0	2/0	1/2	1/1
Free 32-bit EISA/16-bit ISA/8-bit ISA expansion slots ²	0/2/0	0/2/0	0/5/0	0/5/0	0/4/0	0/0/0	0/3/0	0/3/0
PCI or VL bus slots/number free ²	3 PCI/1	3 PCI/2	2 VLB/1	3 PCI/3	3 PCI/0	2 VLB/1, 4 PCI/3	2 PCI/2	3 PCI/2
Hard disk	Quantum Lightning 730A	Conner CFA540	WD Caviar 2420	WD Caviar 2540	WD Caviar 2540	WD AC2540H	WD AC31000H	Seagate ST5660A
Size (MB)	730	540	420	540	540	540	1080	545
Adapter	CMD CSA- 6400E PCI	integrated	integrated	integrated	OEM Prime 2CVL MI-11	DFI MIO-500VL	integrated	integrated
Floppy drives (MB)	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
Graphics adapter	64-bit ATI Winturbo	64-bit Diamond Stealth 64	SkyEagle VLB	integrated 64-bit PCI	Blackship (OEM Cirrus 5428)	64-bit DFI WG-3000P5	64-bit DFI WG-3000P2	Diamond Stealth 32
Installed VRAM/DRAM (MB)	2/0	2/0	0/1	2/0	0/1	0/2	0/2	0/1
Monitor	AcerView 56L	Impression 5 5528N	Alaris	NCR CAM 630Z (3298-2273)	Shamrock SRC 1502	ADI Microscan 4GP	ADI Microscan 5AP/ADI	Casper GV-1564e
Screen diagonal (inches)/ dot pitch (mm)	15/.28	15/.28	14/.28	15/.28	15/.28	15/.28	17/.26	15/.28
Modem speed for fax/data (kbps)	14.4/14.4	n/a	n/a	n/a	14.4/14.4	9.6/2.4	14.4/14.4	14.4/14.4
Sound board	OEM 16-bit	○	○	○	Creative Labs SoundBlaster 16	MediaMagic ISP-16	MediaMagic ISP-16	SoundPlus
CD-ROM drive	Matsushita CR-563B	Mitsumi FX001D	○	NEC CDR-260	IBM CR-563BBZ	Mitsumi FX001D	Mitsumi FX001D	Sony CDU 33A
Data transfer rate (K/sec)	300	350	n/a	300	300	350	350	300
Parallel/serial/mouse/SCSI ports	1/2/1/0	1/2/0/0	1/2/0/0	1/2/1/0	1/2/0/0	2/1/1/0	1/2/0/0	1/2/0/0

Service and support

Warranty (years)	1	1	3	3	1	2	2	3/1 ³
30-day money-back guarantee	●	● ⁵	●	●	●	○ ⁶	○ ⁶	●
On-site service first-year price	free	free	\$79	free	free	\$58 ⁷	\$58 ⁷	free
Repair turnaround policy (days)	2	3	3	2	2	2	2	3
Daily toll-free phone support (hours)	24	10	10	24	10	9.5 ⁸	9.5 ⁸	24 ⁹
Weekend support	●	○	○	●	○	○	○	● ⁹
BBS	●	●	○	●	●	●	●	○
Fax	●	●	●	○	●	●	●	●

¹ All systems priced as configured with DOS 6.0 or later version, Windows 3.1, VGA and color monitor, keyboard, and mouse or other pointing device. Price is direct or based on vendor estimate.

² One less 16-bit slot available when all PCI slots are filled, and vice versa. VL bus slots also accept 8- and 16-bit ISA cards.

³ Three years parts, one year labor.

⁴ Two years parts, five years labor.

⁵ 45-day money-back guarantee.

⁶ 5-day money-back guarantee.

BEST BUY	BEST BUY			
Micron P90PC1 PowerStation	MS Slimline 66	Polywell Poly 486-80VB	Tagram Thunderbolt XL	USA Flex PT-90
\$3398	\$1660	\$1901	\$2939	\$2399
Pentium-90	486DX2-66	Am486DX2-80	Pentium-90	Pentium-90
296-pin ZIF	238-pin ZIF	238-pin ZIF	296-pin ZIF	238-pin ZIF
Phoenix 4.04 8/8/94	Phoenix 4-2 1/15/88	AMI 12/15/93	Phoenix 4.03 8/16/94	AMI 7-22-94 1.00.08. AX1
16/192	8/64	8/64	16/128	8/128
72-pin	72-pin	72-pin	72-pin	72-pin
6/4	4/2	4/3	4/2	4/2
512/512	256/256	256/512	1024/1024	256/256
compact	compact	compact	minitower	compact
0/1	1/2	1/2	1/1	2/2
2/0	0/0	0/0	1/0	0/1
0/4/0	0/3/0	0/4/0	0/1/1	0/4/0
3 PCI/2	1 VLB/1	3 VLB/1	2 VLB/2, 3 PCI/2	3 PCI/2
Conner CFA1080A	WD Caviar 2420	Maxtor 540AT	Maxtor MXT-540A	WD Caviar 2700
1080	420	540	540	700
integrated	integrated	OEM IDE VLB	integrated	integrated
1.44	1.44	1.44	1.44	1.44
64-bit Diamond Stealth 64	integrated VL bus	Actix Graphic Engine Series	64-bit ATI Winturbo	Hercules Stingray
2/0	0/1	0/2	2/0	0/1
Mag DX15F	CTX 1451ES	Socos DCM 1488E	Optiquet 2000DX	CTX 1565GM
15/.28	15/.28	14/.28	15/.28	15/.28
n/a	n/a	n/a	n/a	14.4/14.4
○	○	○	○	○
Mitsumi FX001D	○	Sony CDU 33A	Teac CD-55A	○
350	n/a	300	600	n/a
1/2/0/0	1/2/1/0	1/2/0/0	1/2/0/0	1/2/0/0

⁷ \$116 for two years, \$208 for three years.

⁸ Not toll-free.

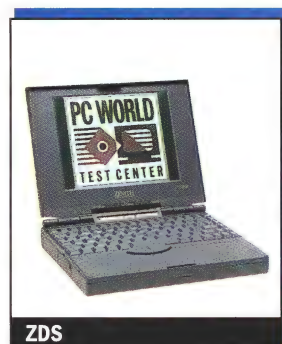
⁹ First year only; thereafter 8.5 hours, weekdays only.

¹⁰ Saturdays only.

The Z-Star EX has a modular construction; the hard drive and screen are both removable and replaceable. The single PCMCIA Type III slot alternatively accepts two Type II devices. The company sent us its optional Z-Player multimedia upgrade. This \$499 package has a double-speed CD-ROM drive, speakers, a microphone, and a 16-bit audio system.

The Z-Star is equipped with ZDS's J-Mouse pointing device, which uses the J key to control the cursor. Battery life is decent at around 3 hours, and you can swap out the floppy drive for a second battery pack if you need

more. ZDS service policies are strong, highlighted by a three-year warranty. Toll-free tech support is available 15 hours a day, week-days only. All in all, this sturdy notebook offers a lot—so much, in fact, that it almost earns a budget mobile Best Buy. *Zenith Data Systems*, 800/553-0331, 708/808-5000 **Reader service no. 638**



ZDS

Zeos Meridian 800C

PC WORLD TOP 20
3 POWER MOBILE PC

PROS: Excellent performance

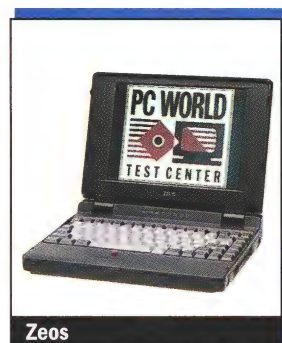
CONS: One-year warranty, can't hot-swap batteries

The 7.8-pound Zeos Meridian 800C notebook strikes an excellent balance of price, features, and performance and just misses a power mobile Best Buy. Its \$3295 price is reasonable for a fast DX4-100 with 8MB of RAM (20MB max), a roomy 340MB hard drive, and a bright 10.3-inch color screen. The keyboard feels much like a full-size desktop setup. And the TruePoint pointing device proved easy to master. A PCMCIA slot accepts one Type III device or two Type II cards.

We got solid battery life of over 4 hours. Unfortunately, this system doesn't support battery hot-swapping, and the power management utility is accessible only through DOS. The clearly written documentation is well illustrated. Zeos's 24-hour toll-free technical help line highlights an otherwise ho-hum support package. You get just a one-year warranty, along with a policy to repair any problem unit within three business days. On our Reliability and Service Monitor, reader response about notebooks has been sparse, reflecting the relatively smaller number of mobile units out there.

Even prominent vendors such as Zeos sometimes receive light feedback. That means we need more data! You can help by faxing reports on your experience. Fill out the Reliability and Service Monitor following this article. (Your response will make you eligible to win a Best Buy PC.)

This quick DX4-100 notebook is a strategic member of Zeos's mobile line. It's a terrific value, and it easily captures a position in the power section of our Mobile PCs Top 20. *Zeos Int'l*, 800/554-5220, 612/362-1234 **Reader service no. 639**



Zeos

System Snapshots

These systems present unique and valuable solutions to end-user needs, but they rate lower as business PCs than the preceding group.

AST Advantage Adventure 4066d

PROS: Fine support, strong multimedia and software bundle **CONS:** Poor performance, poor expandability, 14-inch monitor

The Advantage Adventure 4066d is an all-in-one 486DX2-66 PC with an integrated monitor. It has a \$1799 street price, an impressive software bundle, and very easy setup. A 420MB hard drive and 8MB of RAM are standard, but there's no secondary cache and just a 14-inch display. The CD-ROM drive, sound card, integrated speakers, and 14.4-kbps fax-modem are typical essentials for home users. But expandability is subpar, with a 34MB RAM ceiling, one free drive bay, and two free slots, both of them 8-bit ISA slots. Business-class ASTs tend to be fast. This model is not, performing more like a DX2-50 than a DX2-66.

AST's three-year warranty, year of on-site service, and responsive 24-hour tech support are big pluses from a company with a solid reliability and service rating. But this PC's lackluster performance and poor expandability are likely to deter business users. For more on how this computer rates as a home PC, see "Home Runs: Best Family PCs" in this issue. *AST Research*, 800/876-4278, 714/727-4141 **Reader service no. 640**

AT&T Globalyst 575

PROS: Fast performance, good expandability

CONS: Expensive for a DX4-100

There's a lot to like about the AT&T Globalyst 575: It comes with a DX4-100 CPU, 16MB of RAM, 256K of secondary cache, an integrated 2MB graphics adapter, and a 15-inch monitor. Expandability is excellent, and the system ranks among the fastest DX4-100s in performance. Design, parts, and assembly all show the quality touch that we've come to expect from AT&T—although \$3247 will buy you a similarly configured Pentium-90 elsewhere.

Inside the sturdy compact case you'll find a 540MB hard drive, an IDE CD-ROM

drive, and three free drive bays. An impressive eight slots, including two PCI slots, are free. Service and support is great, with a three-year warranty, a year of on-site service, round-the-clock tech support, and high reliability. The relatively high price keeps the Globalyst 575 off our Power Desktops Top 20, but it doesn't miss by much. *AT&T Global Information Solutions*, 800/872-4547, 818/442-0020 **Reader service no. 641**

BSI NP3656T Pentium Notebook

PROS: Strong performance, 14.4-kbps fax-modem

CONS: Poor battery life, heavy, one-year warranty, weekday-only tech support not toll-free

The BSI NP3656T records first-rate performance scores for a notebook—no surprise considering its Pentium-66 CPU. The unit has 8MB of RAM (40MB max), a 330MB hard drive, PCMCIA Type II and Type III slots, as well as a 14.4-kbps PCMCIA fax-modem. The 8-bit Business Audio and built-in monaural speakers are solid extras.

The 9.5-inch color active-matrix display produces crisp images, and we liked the keyboard and integrated trackball.

But this \$4115 powerhouse has a couple of serious deficiencies: the short 2-hour battery life, and a 10.4-pound traveling weight. In addition, the cooling fan is quite loud. Weekday-only tech support involves a toll call, and there's just a one-year warranty. This notebook is fast, but it presents too many trade-offs. *Broadax Systems*, 800/872-4547, 818/442-0020 **Reader service no. 642**

Compaq Presario CDS 924

PROS: Great service, multimedia bundle

CONS: High price and slow performance for a DX2-66, 14-inch monitor, no local bus expansion slots

The \$2298 486DX2-66 Compaq Presario CDS 924 comes set up for multimedia, with a CD-ROM drive, integrated sound, and speakers. You get 8MB of RAM and a 540MB hard drive, along with a 14.4-kbps

fax-modem, Quicken, Media Pilot, TabWorks, and six CD-ROM titles. No secondary cache is installed, however, and the monitor's just a 14-inch. There are three free drive bays and five free 16-bit slots.

Compaq backs its systems to the hilt with a three-year warranty, a year of on-site service, and 24-hour tech support. Readers give Compaq high marks for reliability. Unfortunately, this DX2-66 is a slowpoke, and considering the system's relatively high price, it's not a likely purchase for business use. For more on how this computer stacks up as a home PC, see "Home Runs: Best Family PCs." *Compaq Computer*, 800/345-1518, 713/370-0670 **Reader service no. 643**

Data Storage DataStor Delta 75VL

PROS: Great price **CONS:** Mediocre performance, 14-inch monitor, no weekend tech support

This IBM Blue Lightning-based system has a great \$1495 price, but its performance doesn't live up to the expectations its 75-

MHz CPU designation engenders. The configuration isn't bad: A Cyrix math coprocessor, 8MB of system RAM, 256K of secondary cache, a 345MB hard drive, and a 1MB VL bus graphics card are the standard offerings. The 14-inch monitor is a tight squeeze if you're working with a large spreadsheet, however. As indicated, performance is a bit disappointing, posting slow-

er scores than a typical 486DX2-66. The system has three free drive bays and six free slots, including one VL bus slot.

Data Storage offers good support policies; you get a three-year warranty, one-day turnaround on factory repairs, and on-site service at \$50 for the first year, but there's no weekend tech support. Data Storage is new to our pages, so we can't report a service track record for the company. The DataStor 75VL Delta isn't a bad deal, but it's not a good choice for demanding applications. *Data Storage Marketing*, 800/543-6098, 303/442-4747 **Reader service no. 644**

Compaq backs its systems to the hilt, and readers give high marks for reliability. But this DX2-66 is a high-priced slowpoke.

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FEATURES COMPARISON: THIS MONTH'S CONTENDERS—MOBILE PCs

Budget Best Buy WinBooks: Fine Features for the Money

● Yes

○ No

n/a = not applicable

Standard features

	Austin Business Audio 4/75	Compaq Contura 400c	Exerex Septette DX4-75	WinBook XP DX2/50	WinBook XP DX4/75	ZDS-1 Star EX	Zeos Meridian 800C
Street price as of 11/1/94 ¹	\$2699	\$2879	\$3671	\$2259	\$2359	\$2258	\$3295
CPU	DX4-75	486DX2-40	DX4-75	486DX2-50	DX4-75	Cx486DX2-50	DX4-100
Traveling weight (pounds) ²	8.2	7	7.6	6.8	7	6.8	7.8
Width x depth x height (inches)	11.1 x 8.6 x 2	11.9 x 9 x 1.9	11.3 x 8.8 x 2.2	11.5 x 8.8 x 2.0	11.5 x 8.8 x 2.0	11 x 8.9 x 2	11.7 x 8.9 x 1.9
Installed/maximum RAM (MB)	8/32	8/20	8/20	8/32	8/32	8/20	8/20
Secondary RAM cache installed/maximum (K)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Installed/maximum hard disk (MB)	260/700	250/250	255/540	255/520	125/520	200/340	340/340
Removable hard disk	●	○	●	●	●	●	●
Display type	color dual-scan	color dual-scan	color active	mono passive	color dual-scan	color passive	color dual-scan
Screen diagonal (inches)	9.5	9.5	9.5	9.5	9.4	9.5	10.3
Maximum colors or gray shades of LCD	256	256	256	64	256	256	256
Simultaneous LCD and external monitor	●	●	●	●	●	●	●
Highest resolution of external monitor	1024 x 768	1024 x 768	1024 x 768	1024 x 768	1024 x 768	1024 x 768	1024 x 768
Mouse/keyboard ports	1/0	1/0 ³	1/0 ³	1/0	1/0 ³	1/0 ³	1/1
Cursor keys in inverted T	●	●	●	●	●	●	●
Dedicated page-control keys	●	●	●	●	●	●	●
All 12 function keys dedicated	○	●	●	●	●	●	●
Standard <Ctrl> and <Alt> layout	●	●	○	○	○	○	●
Built-in pointing device	●	●	●	●	●	●	●
Modem speed for fax/data (kilobits per second)	n/a	n/a	n/a	14.4/14.4	n/a	n/a	n/a
Docking station available	●	●	●	●	●	○	○
PCMCIA slot Type II/III ⁴	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Power management

Supports APM	○	●	●	●	●	●	●
Type of battery	NiMH	NiMH	NiMH	NiMH	NiMH	NiMH	NiMH
Suspend button	● ⁵	●	● ⁵	●	●	●	●
Suspends when case closed	○	○	●	○	○	●	●

Service and support

Warranty (years)	1	3	2	1	1	3	1
30-day money-back guarantee	●	○	○	●	●	●	●
On-site/replacement service first-year price	○	● ⁶	○	○	○	free	○
Repair turnaround policy (days)	2	2	2	3	3	2	3
Daily toll-free phone support (hours)	24	24	10 ⁷	11	11	15	24
Weekend support	●	●	○	● ⁸	● ⁸	○	●
BBS	●	●	●	○	○	●	●
Fax	●	●	●	○	○	●	●

¹ All notebooks priced as configured with DOS 6.0 or later version, Windows 3.1, VGA monochrome or better display, and mouse or other pointing device. Price is direct or based on vendor estimate.

² Includes computer, adapter, power cord, and external floppy drive if notebook has one.

³ Mouse port doubles as keyboard port.

⁴ Type III slot also holds two Type II devices.

⁵ Suspends with key combination.

⁶ \$149 for three years of on-site service.

⁷ Not toll-free.

⁸ Saturdays only.

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mere mortal. **Now you're**
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organizational
charts, even
space plans,
and someone
says, "Geez, I didn't
know *You* could do all that."
And *You* just take a
sip of your coffee.



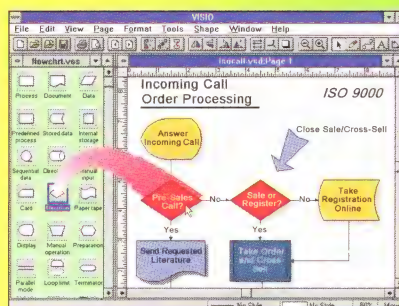
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"Best color quality, best sharpness and best versatility – what more could we ask of the ViewSonic 17? Frankly, we were surprised that one monitor could do it all."

– PC Computing; January 1994



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– Windows; September 1994

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Data Storage DataStor P5-90 Pentium

PROS: Strong performance, great expandability, three-year warranty **CONS:** No weekend tech support
This \$3580 Pentium-90's benchmark scores are among the fastest we've seen. You get 16MB of RAM, 256K of secondary cache, a 540MB Maxtor Enhanced-IDE hard drive, a 2MB PCI graphics adapter, and a 15-inch monitor. Data Storage provides a CD-ROM drive, a sound card, speakers, a microphone, and a selection of CD-ROM apps. This tower system has an impressive seven free drive bays. One PCI slot, one PCI or 16-bit slot, and three 16-bit slots are also free.

Data Storage's support policies are well above average, with a long three-year warranty and a one-day turnaround policy on factory repairs. Unfortunately, the company provides no weekend technical support. That shortcoming aside, this system has a lot to offer. You know the competition is *very* heavy when a powerhouse PC like this one misses our preferred list. *Data Storage Marketing*, 800/543-6098, 303/442-4747 **Reader service no. 645**

DFI Diamond P60

PROS: Good performance, good expandability for a multimedia desktop **CONS:** Tech support not toll-free
DFI's \$2499 Diamond P60 desktop sports a multimedia configuration and delivers above-average Pentium-60 performance. You get 8MB of RAM, 256K of secondary cache, a 540MB hard drive, a CD-ROM drive, MediaMagic's 16-bit sound card, speakers, a 2MB 32-bit PCI graphics card, and a 15-inch monitor. The 9600/2400-bps fax-modem is slow by current standards, but it's adequate for light use. You can add three expansion cards (one PCI, one 16-bit ISA, and a short 16-bit or PCI card) and three drives.

DFI's two-year warranty and optional \$58-per-year on-site service are just fine, but the short five-day money-back guarantee

and toll call for weekday-only tech support fall noticeably short these days. Even with the support drawbacks, however, this quick multimedia system is a decent buy. Unfortunately, it falls into a gray area: Its price is too high for a budget unit, and its performance and configuration aren't up to power standards. *DFI*, 800/275-3342, 916/568-1234 **Reader service no. 646**

Digital Celebris 466

PROS: Three-year warranty, Plug and Play support

CONS: Small hard drive and monitor

This tiny system's cleverly designed interior uses space efficiently. One PCI slot, one PCI or 16-bit slot, and two 16-bit slots are free, and every 16-bit slot accepts a full-length card. The system's drive cage pops up to give you access to the free internal drive bay, and you also get a free externally accessible bay. The 270MB hard drive and 14-inch monitor are both undersized for business use, however. And \$2298 is a bit too much to pay these days for a system that has 8MB of RAM, 256K of secondary cache, and typical DX2-66 performance.

On the upside, the Celebris 466 supports Plug and Play and is Energy Star compliant. Support policies are stellar: You get a three-year warranty, 24-hour toll-free technical support, and free on-site service. *Digital Equipment*, 800/722-9332, 603/884-4304 **Reader service no. 647**

NEC Ready 466M

PROS: Triple-speed CD-ROM drive, top documentation, fine support **CONS:** Expensive for a 486DX2-66, no weekend tech support

This sleek DX2-66 minitower comes with 8MB of RAM, 256K of secondary cache, and a 420MB hard drive. It would rate better if it cost less, but the \$2504 price buys quality components, including a triple-speed NEC CD-ROM drive and a 15-inch NEC monitor. There's also a 1MB integrated 32-bit graphics controller, a 14.4-kbps fax-modem, a sound card, speakers, and a healthy bundle of CD-ROM applications.

One VL bus and two 16-bit slots are free. NEC's outstanding three-year warranty includes a year of free on-site service, and the system documentation is excellent. Toll-free technical support is available 12 hours daily, but not on weekends. This desktop system is quick for its class, but it's priced too high to make our budget honor roll. *NEC Technologies*, 800/632-4636, 508/264-8000 **Reader service no. 648**

NEC Ready P60M

PROS: Triple-speed CD-ROM drive, top documentation, fine support **CONS:** Pricey compared to similarly equipped units, no weekend tech support

NEC's Ready P60M Pentium-60 minitower is loaded with power, features, and elegance. It has 16MB of RAM, a 256K secondary cache, a 420MB hard drive, an integrated 2MB PCI graphics adapter, and a 15-inch NEC monitor. Performance is strong for a Pentium-60, and you get a triple-speed NEC CD-ROM drive, a sound card, speakers, a microphone and a slew of useful pre-installed software. There are three free drive bays, and one PCI, one PCI or 16-bit, and two 16-bit slots are free.

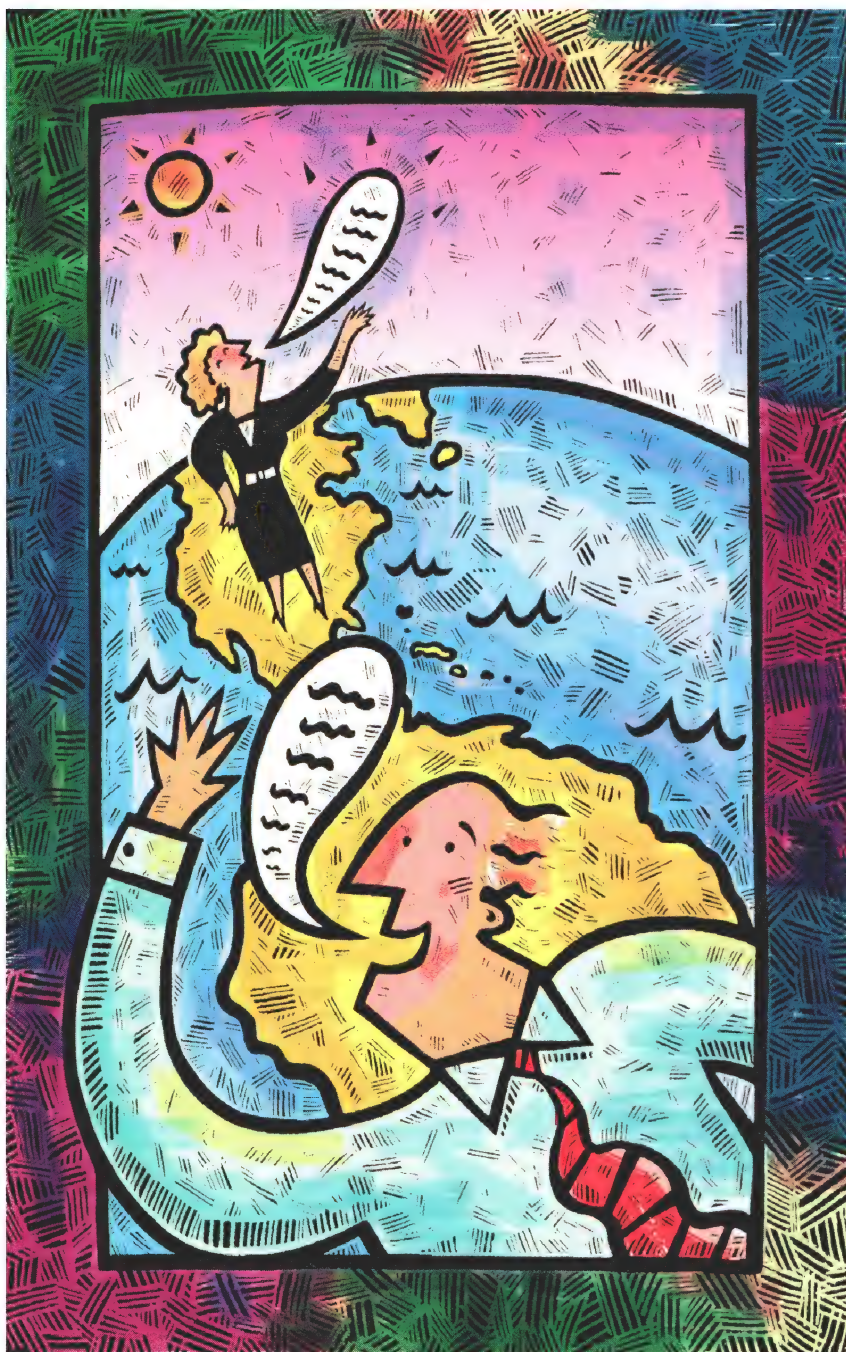
NEC support policies for this unit are the same as for the Ready 466M reviewed above. On our Reliability and Service Monitor, readers rate NEC well above average. What hurts this well-designed system is price: \$3204 is a lot to pay for any Pentium-60 these days. *NEC Technologies*, 800/632-4636, 508/264-8000 **Reader service no. 649**

Panasonic V41

PROS: Built-in CD-ROM drive, strong performance, large screen **CONS:** High price, heavy, short battery life, one-year warranty, no weekend tech support
Panasonic's V41 DX4-100 is the first notebook we've reviewed that has a built-in CD-ROM drive. It's configured with 8MB of RAM and a big 450MB hard drive. The integrated 1MB VL bus graphics adapter, big 10.5-inch active-matrix color screen, and built-in 16-bit sound capabilities make this unit a full-blown portable multimedia PC. Performance is near the best we've seen on a notebook. Still, the high \$6599 price and limited battery life keep it off our shortlist. Full battery life is less than 2.5 hours, and to get that, you must remove the floppy drive and install the secondary battery pack; otherwise it runs for only about an hour un-

The Panasonic V41
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11.2 pounds. But part
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comes from a built-in
CD-ROM drive.

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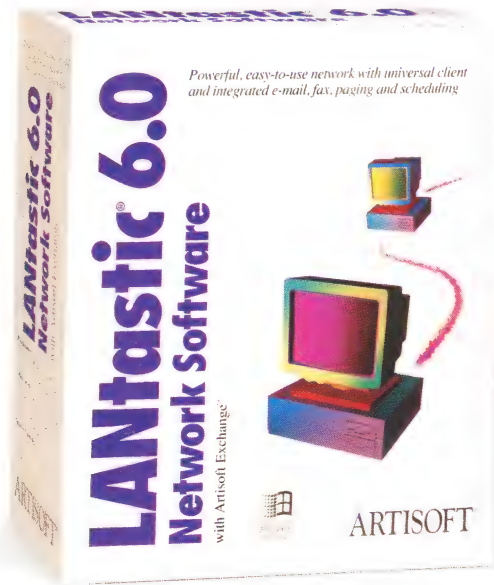
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plugged. (Battery test times don't include CD-ROM drive use.) The unit's 11.2-pound traveling weight is heavy, although a portable CD-ROM drive would add some pounds to your load, too.

This system's PCMCIA slot can hold one Type III or two Type II devices. Panasonic offers just a one-year warranty and week-day-only tech support. On balance, this is a very versatile—if high-priced—unit. But it's clearly at its best on a desktop with its plug in the wall. *Panasonic Personal Computer Co.*, 800/742-8086 **Reader service no. 650**

Robotech Cobra RS Home Runner

PROS: Good performance, lots of preinstalled software

CONS: Priced over the budget limit, uses 30-pin SIMMs Robotech's \$2299 Cobra RS Home Runner barely exceeds our new \$2250 Budget Desktops Top 20 ceiling—a shame, as this is a fine budget-class PC. It uses the new AMD Am486DX2-80 CPU and performs in the same range as a Pentium-60. You get 16MB of RAM (128MB max), 256K of secondary

cache, a 540MB hard drive, a 2MB VL bus graphics card, a 15-inch monitor, and a multimedia setup with lots of bundled software.

One full-length VL bus slot and four shorter 16-bit slots are free, along with two free drive bays. Surprisingly, the Cobra RS uses older-style 30-pin SIMMs, which give you less upgrading flexibility than 72-pin modules. Robotech's two-year warranty includes one year of on-site help, and tech support has Saturday hours. AMD reports that the end-of-1994 supply problems on its DX2-80 will be clearing by the time you read this. Robotech's Cobra RS is a good value. With a slightly lower price, this system would be a contender. *Robotech*, 800/255-2215, 801/565-0645 **Reader service no. 651**

Samsung Notemaster 486P S3945T

PROS: Fast performance, quality active-matrix color

CONS: High price, mediocre battery life Samsung's Notemaster 486P S3945T is a fast DX4-75 mobile PC with 8MB of RAM and a 250MB hard drive. Its 9.5-inch active-matrix screen provides a crisp, vivid display, and you get both a PCMCIA Type II and a Type III slot. Battery life on the hot-swappable battery packs is short at just under 3 hours. Samsung wouldn't estimate a street price, leaving it to customers to shop around using the \$4999 list price as a reference.

Support policies are plain vanilla, and we need more feedback from readers for a detailed report. Good performance and a fine display aren't enough to earn this unit a spot on our Mobile PCs Top 20; it would need a lower price and a longer battery life to even come close. *Samsung Electronics America*, 800/726-7864 **Reader service no. 652**

Twinhead Slimnote 550T

PROS: Good performance, modular design

CONS: One-year warranty

The \$3900 Slimnote 550T exhibits strong performance for a 486DX2-50 notebook. You get a 1MB integrated VL bus graphics controller and a bright 9.5-inch active-

matrix color screen. CPU, hard drive, memory, and screen are all user upgradable. One battery pack lasts just a decent 3.5 hours, but you can swap the floppy drive for a second pack (\$130 extra) and double your unplugged hours.

This hefty 8.3-pound unit comes with 16-bit stereo sound, built-in speakers, and a PCMCIA slot that takes either one Type III

Robotech's new AMD Am486DX2-80 barely exceeds our new \$2250 Budget Desktops ceiling—a shame, as this is a fine budget PC.

card or two Type II devices. Twinhead's one-year warranty is less than optimum, but you get technical support six days a week and on-site pickup with repair or replacement within 48 hours. This unit doesn't make our Mobile Top 20, but it's a solid value nonetheless. *Twinhead*, 800/995-8946, 408/945-0808 **Reader service no. 653**

ZDS Z-Noteflex

PROS: Good performance, modular design, three-year

warranty **CONS:** A bit pricey for its configuration, no weekend tech support

With most portables, you have to play the hand you're dealt: There's no upgrade for critical components. ZDS's solid, well-designed modular Z-Noteflex offers an array of upgrades. Replacing the screen, for example, will take you just a few minutes—try that trick with most notebooks. However, \$3221 is a fairly stiff ante for a unit with just a 210MB hard drive and a passive dual-scan screen. Still, performance is A-OK on this 7.6-pound 486DX2-50 system with 8MB of RAM (24MB max), and battery life is respectable at over 3.75 hours. You get a PCMCIA slot that holds one Type III card or two Type II devices.

Service policies include a three-year warranty and responsive tech support 15 hours a day (but not on weekends). The price is a bit too high and the hard drive a little too small to make this a Top 20 notebook, but it manages a good value rating nonetheless. *Zenith Data Systems*, 800/533-0331, 708/808-5000 **Reader service no. 654**

BATTERY LIFE TEST REPORT

Compaq, WinBook DX2/50 Batteries Last Over 6 Hours

Compaq Contura 400c	6:46
WinBook XP DX2/50	6:45
WinBook XP DX4/75	5:39
Everex StepNote DX4-75	4:41
Zeos Meridian 800C	4:13
Austin Business Audio 4/75	3:57
ZDS Z-Star EX	3:09
Best Buys in red	

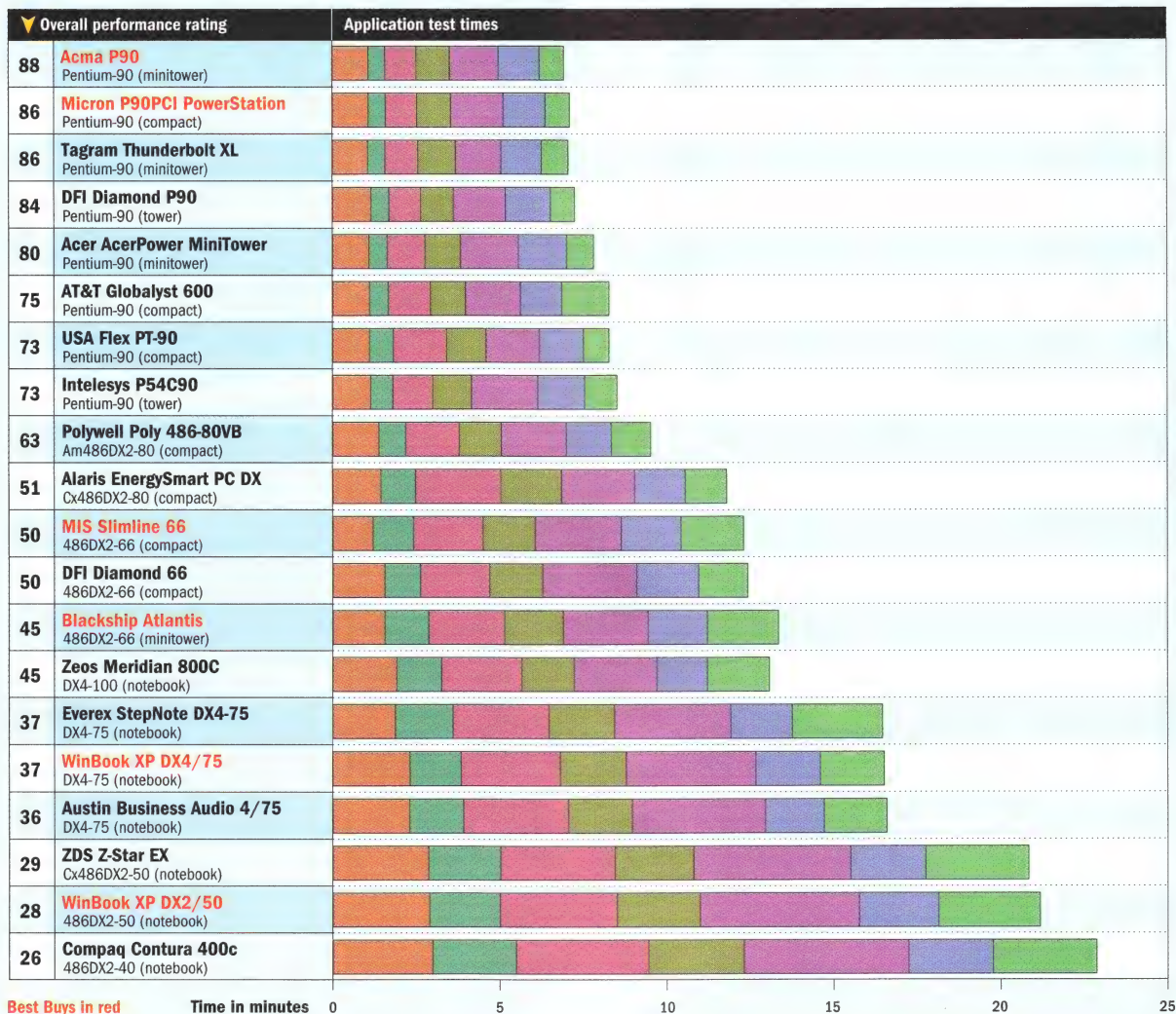
Time in hours:minutes.

Methodology

We drain and fully recharge the battery and set power-saving options to match a consistent profile where possible. Office workers type at regular intervals in Word for Windows, saving periodically. Notebooks are rotated among workers to even the workloads. We report the time elapsed until the notebook shuts itself off.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Acma Pentium-90 Sets a Record Pace



Systems are arranged in order of overall performance from best to worst, based on the normalized, weighted scores from seven tests. A system may have a better overall performance rating than another system that took less time to complete our test suite.

Methodology

We tested each system as supplied by the manufacturer, using the version of DOS supplied. If we installed Windows, we used the default installation. We configured Windows with an HP LaserJet III as the default printer, disabled Print Manager, and attached a null printer to LPT1. We set video resolution to 800 by 600 pixels in 256 colors using the supplied video driver where possible. We loaded the test applications and files and test automation software and scripts.

Word 2.0 for Windows

We worked with 1-, 9-, and 28-page business documents. Operations included creating, saving,

opening, scrolling, editing, checking spelling, formatting, previewing, and printing.

Excel 4.0

We opened a file and performed several data extracts, entered new data, altered calculations, formatted, scrolled, moved blocks, previewed, printed, and saved.

Paradox 1.0 for Windows

We used a custom form to add a moderate number of records to an existing table, performed several queries, and generated a report.

Freelance 1.0 for Windows

We built a six-page presentation using a standard template, clip art, text, and charts; applied several views to the presentation; and previewed and saved it.

WordPerfect 6.0 for DOS

We performed a variety of editing, formatting, previewing, and printing tasks on documents ranging from a single-page memo to a long report. Due to memory requirements, the amount of free memory for DOS in the first 640K dramatically affects this test.

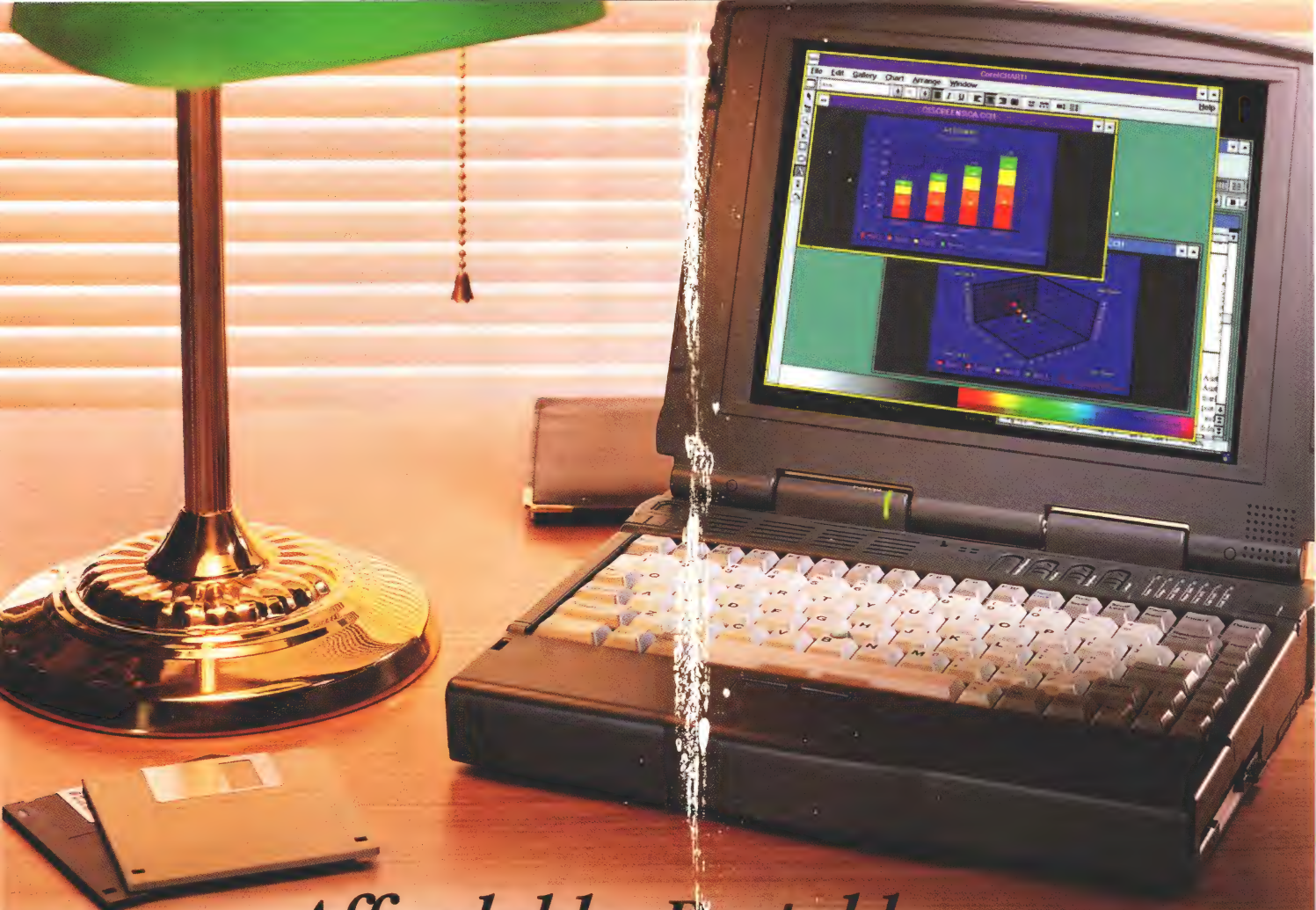
1-2-3 release 3.4 for DOS

Using the graphical Wysiwyg add-in and working in three different files, we created and altered formulas, built graphs, saved, and printed.

Paradox 3.5 for DOS

We tested Paradox 3.5 running under Windows in a DOS window. We entered data, searched records, updated, and generated reports from a simple customer list.

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Affordable, Portable Pentium™ Power!

P90 Colorscan

If you make more presentations in the offices of others than in your own, you'll want to own our new P90 Colorscan notebook. It's powered by a 90MHz Pentium™ processor, with built-in stereo for superior sound, 1MB video controller and 10.3" dual scan or optional active matrix display for graphics that match most desktops.

And most desktops can't match the ease with which you'll prepare presentations with the P90 Colorscan! This notebook has the center-mounted point-stick you've read about — the one that moves

on-screen arrows in a finger-snap! It also has a snappy 256KB external cache and RAM options from 8MB to 40MB!



475 Colorscan

If you do more preparing than presenting, we present the 475 Colorscan. It packs the 75MHz IntelDX4 processor, a hard drive that lets you pack more applications, and a choice of color displays. All at a price that makes it the perfect choice for those who must stay as productive on the fly as in the office!

P90 Colorscan Escort

- ☐ Intel 90MHz Pentium™ Processor
- ☐ 10.3" Dual Scan Display
- ☐ 8MB RAM Expandable to 16MB, 24MB or 40MB
- ☐ 340MB or Optional 520MB IDE Hard Drive
- ☐ 1MB Video Memory, Local Bus Controller
- ☐ Mouse Pointer Stick, Centered Among Keys
- ☐ 256KB Cache
- ☐ Business Audio with Built-in Stereo Speakers and Microphone
- ☐ Weight: 6.5 lbs. incl. Battery
- ☐ Battery Life appr. 2 Hours

475 Colorscan Escort

- ☐ 75MHz IntelDX4 Processor
- ☐ 9.5" Dual Scan Display
- ☐ 4MB RAM Expandable to 8MB or 20MB
- ☐ 340MB or Optional 520MB IDE Hard Drive
- ☐ 512KB Video RAM
- ☐ Local Bus Video Controller
- ☐ Built-in 19mm Trackball
- ☐ Business Audio with Built-in Microphone and Speaker
- ☐ Weight: 6.5 lbs. incl. Battery
- ☐ Battery Life appr. 2 Hours

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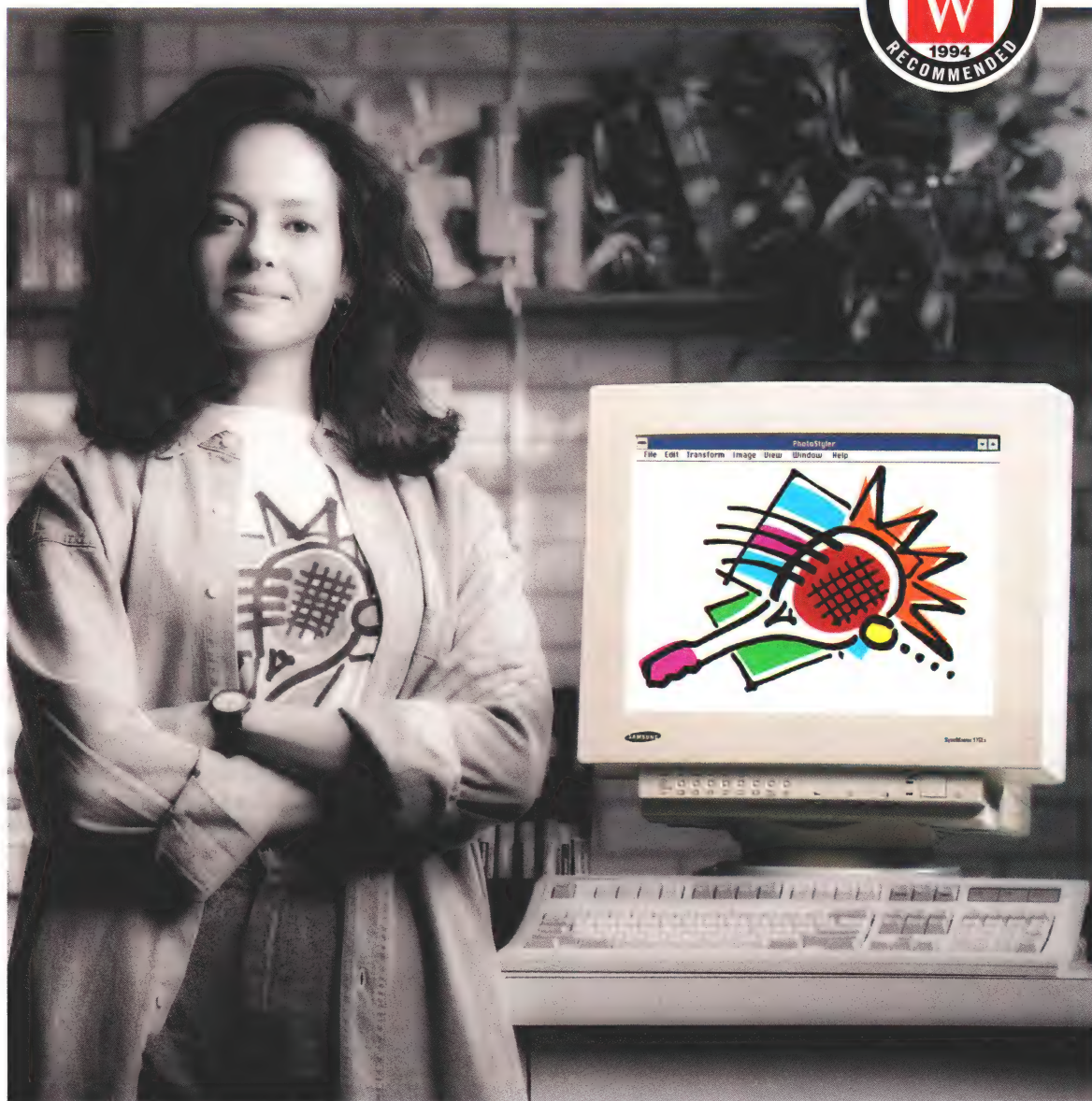
Circle 73 on reader service card

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Based on the service and support you received, would you buy this brand of PC again?

Samsung A new point of view.



SyncMaster 17GLs

It's about how you work...Attitude. Satisfaction. Pride. The 17-inch SyncMaster™ monitors reflect today's changing lifestyles. Hassle-free. Value-oriented.

Samsung took for granted you wanted bright, crisp clear images that don't flicker. You're also concerned about safety and energy conservation, so they're standard on the whole series. Life should be as simple as possible, so we added

SyncMaster	14GL	15GL	17GL	17GLs
CRT Size	14"	15"	17"	17"
Dot Pitch	.28	.28	.28	.26
Maximum Resolution	1024x768	1024x768	1280x1024	1600x1280
Maximum Refresh Rate at Maximum Res. (Hz)	76	76	60	60
MPR-II (Low Radiation)	•	•	•	•
Power Management	•	•	•	•
Flat Square Screen		•	•	•
On-Screen Programming			•	•
Real Color Control				•
Warranty	2 Years	2 Years	2 Years	2 Years

*1994 Samsung Electronics America Inc. The EPA Energy Star logo is not to be considered a product endorsement. Image on SyncMaster 17GLs courtesy of Mike Quon Design Office.

innovative new features like On-Screen Display and Real Color Control, and as you would expect, the GL Series comes with a two-year limited warranty.

Think about how you view your work. Samsung did. And came up with a whole new point of view.

For additional information, call 1-800-933-4110.

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Circle 198 on reader service card

Top 10 Windows Accelerators: STB Powergraph Sizzles

Since September of last year, ATI's Graphics Xpression has reigned over our Top 10. Now a new challenger has unseated the longtime champ, while two other newcomers have joined it on the charts. Leading the big shake-up are DRAM-based boards that combine fast 64-bit performance with affordable street prices.

Our new number one is the PCI-based STB Powergraph 64, the first board we've seen based on S3's new Trio64 graphics chip. The Trio64 packs into a single square of silicon what most boards put in three separate chips, allowing STB to sell the Powergraph 64 for just \$180 on the street. The design pushed the 2MB board to an impressive 78.2 score in our Windows Integrated Test Suite (WITS). Add STB's Vision software—with useful utilities like pan and zoom and easy graphics mode switching—plus a strong support policy and a lifetime warranty, and the STB Powergraph 64 takes a wide lead over competitors.

Two other boards new to the rankings this month both use the S3 Vision864 chip that's also found in the PraeTek FastMax P20, STB Powergraph Pro, and Number Nine #9GXE64. Western Digital's Paradise Bahamas 64 is a hot performer with an overall PC World WITS score of 77.4, and its aggressive \$199 street price helps

power it to sixth place on our list. However, the board lacks graphics utilities—such as virtual-display and mode-switching software—that are found in most competing products. Meanwhile, the Genoa Phantom 64 trails in overall value due to its higher \$230 street price, but its 79 overall WITS score makes it the second fastest board we've ever tested and the fastest on our Top 10 chart. Genoa's thoughtful installation software and easy-to-use graphics mode utilities

make this board a breeze to configure, but in 24-bit color the drivers we used had trouble displaying Windows icons.











Finally, ATI has introduced the VRAM-based WinTurbo, a nonupgradable 2MB version of its high-performance Graphics Pro Turbo, based on ATI's Mach64 chip. While the board's 77.6 WITS score is impressive, the \$320 street price is simply too high to compete with the values offered by Top 10 products. Still, the WinTurbo's built-in enhancement of full-motion video and its impressive suite of graphics utilities make it an excellent choice for demanding users.

WITS was developed by Jon Peddie Associates, a PC graphics consulting firm. Jon Peddie and Fred Dunn are the firm's principal officers.

The Powergraph 64 is the first board we've seen based on S3's Trio64 chip.

TOP 10 ACCELERATORS

- ▶ New this month
- ▲ Up from last month
- ◀ No change from last month
- ▼ Down from last month

1		STB Powergraph 64 800/234-4334	99	\$180	13.6	16.5	13.7	11.7	16.7	6.1	78.2	2/D PCI	Trio64 7/11/94	601
2		ATI Graphics Xpression 905/882-2600	94	\$225	13.4	16.6	13.2	11.6	15.6	4.8	75.1	2/D PCI	88800CX 4/11/94	602
3		PraeoTek FastMax P20 800/752-8033	94	\$189	13.1	16.2	13.4	11.5	15.3	6.6	76.1	2/D PCI	Vision864 6/1/94	603
4		STB Powergraph Pro 800/234-4334	93	\$219	12.8	15.6	12.2	11.7	14.6	6.6	73.4	2/D PCI	Vision864 5/9/94	601
5		STB LightSpeed 800/234-4334	92	\$199	12.5	14.5	12.6	11.4	14.7	5.9	71.5	2/D VL	ET4000/W32p 4/10/94	601
6		Paradise Bahamas 64 800/568-9272	92	\$199	13.7	16.4	13.3	11.3	16.6	6.3	77.4	2/D PCI	Vision864 7/11/94	604
7		Hercules Dynamite Power PCI 800/532-0600	91	\$199	13.2	15.2	13.3	12.8	15.3	5.7	75.5	2/D PCI	ET4000/W32p 5/11/94	605
8		Genoa Phantom 64 ² 800/934-3662	90	\$230	14	16.9	13.4	11.5	16.9	6.3	79	2/D PCI	Vision864 8/2/94	606
9		Diamond Stealth 64 VRAM ² 800/380-0030	90	\$315	13.5	17.9	13.1	11.2	12.9	8.5	77.1	2/V VL	Vision964 4/1/94	607
10		Number Nine #9GXE64 800/438-6463	90	\$249	12.8	14.7	10.3	11.5	14.3	6.5	70.1	2/D PCI	Vision864 4/26/94	608

Methodology Boards were tested at 1024 by 768 resolution at 256 colors and a minimum 70-Hz refresh rate on a 486DX2-66 with 16MB of RAM and 256K of secondary cache. Application scores are the factor by which a board exceeds our baseline system, an unaccelerated ET4000-based VGA adapter on a 386DX-25 with 16MB of RAM. The overall value score balances performance, estimated street price, and features. The overall WITS score is the aggregate of the application scores. For all scores, higher is better.

¹ D = DRAM, V = VRAM.

² Comparable value offered by other bus versions tested.

For more information about all products in this table, circle reader service no. 901.

HP quality in
value-priced PCs.

HP Vectra VL2



from
\$1,119*

- Intel 50-MHz 486SX2, 50- and 66-MHz 486DX2, 100-MHz DX4, upgradeable to Pentium™ Overdrive™ processor; Intel 60-MHz Pentium processor
- Chip upgrades to higher performance
- On-board accelerated local-bus video
- 210-MB hard drive¹
- 4-MB RAM, expandable to 64-MB
- 512 KB or 1 MB of Video RAM standard
- ISA Plug-n-Play compliant
- Desktop Power Management
- EPA Energy Star certified
- Local bus Fast-IDE hard disk interface**
- 1280 x 1024 video resolution**
- Optional 128- or 256-KB cache memory**
- Free three-year limited warranty for parts and labor²

High-performance
network-ready PCs
in a slimline package.

HP Vectra N2



from
\$1,459*

- Intel 50-MHz 486SX2, 50- and 66-MHz 486DX2, upgradeable to Pentium Overdrive processor
- Optional 128- or 256-KB second level cache
- 270-MB, 14-ms Fast-IDE hard drive¹
- 32-bit Fast-IDE local-bus hard disk interface
- 8-MB RAM, expandable to 96-MB
- Ultra VGA2 local-bus accelerated video supporting up to 1280 x 1024 resolution
- 1 MB of video RAM standard, expandable to 2 MB
- Slimline package with two mass storage shelves and three ISA slots
- Optional integrated 10Base-T networking
- Multilevel security
- EPA Energy Star certified
- ISA Autoconfiguration utility (Plug-n-Play)
- Integrated Desktop Management Interface (DMI)³
- Free three-year limited warranty for parts and labor²

High-performance
PCs for the
connected office.

HP Vectra M2



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- Intel 50-MHz 486SX2; 50- and 66-MHz 486DX2, 100-MHz DX4, upgradeable to Pentium Overdrive processor
- Optional 128- or 256-KB second level cache
- Four mass storage shelves; four expansion slots
- One available 32-bit VL-bus slot
- 270-MB, 14-ms Fast-IDE hard drive¹
- 32-bit Fast-IDE local-bus hard disk interface
- 8-MB RAM, expandable to 96-MB
- Ultra VGA2 local-bus accelerated video supporting up to 1280 x 1024 resolution
- Optional integrated 10Base-T networking
- Systems Diagnostics Utility
- EPA Energy Star certified
- ISA Autoconfiguration utility (Plug-n-Play)
- Integrated Desktop Management Interface (DMI)³
- Free three-year limited warranty for parts and labor²

Exceptional 486 performance for
advanced business use.

HP Vectra XM2



from
\$1,779*

- Intel 50- and 66-MHz 486DX2; 100-MHz DX4, upgradeable to Pentium Overdrive
- PCI architecture
- Standard 256-KB second level write-back cache
- Four mass storage shelves; four expansion slots
- Two available 32-bit PCI expansion slots
- 210-MB, 14-ms Fast-IDE hard drive¹
- 32-bit PCI IDE hard disk interface
- 8-MB RAM, expandable to 96-MB
- PCI Integrated 64-bit S3 Vision-864 graphics accelerator supporting up to 1280 x 1024 resolution
- Optional PCI Integrated 32-bit 10Base-T networking
- Integrated Desktop Management Interface (DMI)³
- EPA Energy Star certified
- Free three-year limited warranty for parts and labor²



*Source: 1994 J.D. Power and Associates Desktop PC Customer Satisfaction Study.SM Study conducted among business users and based on 1,528 user respondents.
**Feature included with some models. All HP Vectra PCs come with MS-DOS® 6.2 and MS Windows for Workgroups 3.11 pre-installed; HP mouse and keyboard included.
¹U.S. list price, dealer prices may vary. Monitor not included. ²Other capacities available. ³First year on-site, 24-hour service. Second and third year return to dealer.
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The ultimate PC for advanced business and technical applications.

HP Vectra XU



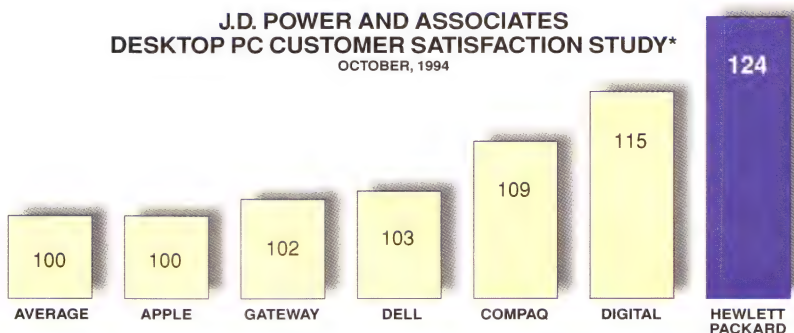
from
\$3,279[†]

Intel 90-MHz Pentium processor
Second processor socket for MP
Spec 1.1 multi-processing
Standard 256-KB second level
synchronous or burst
synchronous write-back cache
PCI architecture
Four mass storage shelves
(three front accessible); five
expansion slots
Two available 32-bit PCI
expansion slots
70-MB, 12-ms Fast SCSI-2
hard drive¹
Integrated 32-bit PCI SCSI-2
interface
PCI integrated 64-bit S3
vision-864 graphics with 1280
1024 resolution or PCI MGA
Ultima Plus graphics with up
to 1600 x 1200 resolution
32-bit PCI IDE hard disk
interface
Up to 16 MB of RAM, expandable
to 256 MB
PCI Integrated 32-bit 10Base-T
networking
Integrated Desktop Manage-
ment Interface (DMI)³
Free three-year limited
warranty for parts and labor²



No other PC can display this icon.

J.D. POWER AND ASSOCIATES
DESKTOP PC CUSTOMER SATISFACTION STUDY*
OCTOBER, 1994



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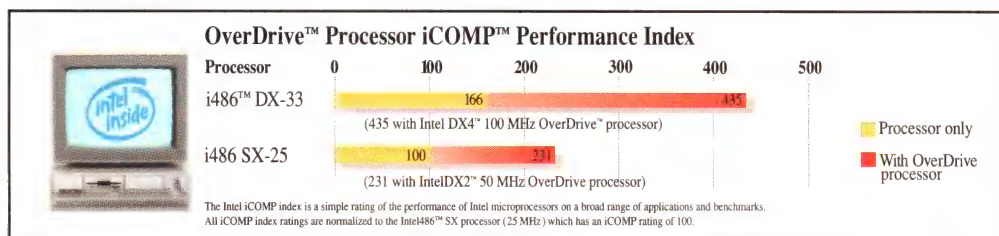
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HELP LINE Q & A



Tip of the Month

WHAT TO ASK BEFORE BUYING A NEW OS: With OS/2 Warp version 3.0 and Windows NT 3.5 shipping and Windows 95 coming, you may be considering an operating system upgrade. Here are the questions to ask before buying a new OS:

- Does your PC have the CPU, memory, and disk space to run the new OS?
- Will the new OS run your current apps? Which ones will you have to upgrade to take full advantage of the OS? Are those upgrades available?
- Does the new OS have drivers that support your peripherals? If not, does your peripheral manufacturer have the drivers?
- Will the new OS work with your compressed drives?
- Does the OS vendor offer toll-free support? At what hours and for how long?
- Can you install the new OS without overwriting your current one? Does the new OS come with a dual-boot utility? An uninstall utility?
- Do you have a backup of your current setup so you can abandon the new OS installation and retreat to your old setup, if need be?
- Do you really need the new OS, or is your money better spent on new hardware?

PC World Editors

World Wide Web by WELL?

Q I want to explore the Internet using World Wide Web browsing tools like NCSA Mosaic and Cello, but I'm not sure how to get the right kind of connection. I understand that those programs require a serial line Internet protocol (SLIP) connection via the Winsock API. And although I'm a member of the WELL conferencing system (meaning I have a UNIX shell account there), the WELL apparently doesn't support SLIP. Is there some way around this limitation, or can you point me to a list of Internet service providers that do offer a SLIP connection?

Pyramid@well.sf.ca.us

A If you thought Doom and Myst were the greatest time-burners that ever hit your life, just wait until you enter the virtual world of the Web. Its seemingly endless network of hypertext pages contain everything from people's résumés and unsolicited observations on the world to NASA weather maps, fine art, computer animations, corporate promotions, and best of all, links to others' favorite Web locations.

To run Mosaic or any of the other excellent shareware Internet tools, you need a numeric Internet Protocol (IP) address, like 199.117.100.39. But an E-mail gateway from your LAN or a dial-up shell account on a UNIX system won't provide these addresses. Unfortunately, finding an Internet provider isn't always easy or economical, and due to the increasing popularity of the Internet, the service may not be top-notch. Even Netcom—one of the premier dial-up SLIP providers—stopped handing out SLIP accounts to new clients last summer. (The company says it plans to resume offering the service at some point in the future.)

If your dial-up UNIX shell account is a local call away, you may want to consider an innovative product that tricks the host system into providing a SLIP connection. The Internet Adapter (TIA) is a \$25 UNIX program from Cyberspace Development; install it in your shell account's home directory, and an included registration code activates the program for your account alone. Cyberspace Development has written versions of TIA for 11 different UNIX

host systems, including Sun SPARC systems running the Sun-OS and Solaris UNIX flavors, as well as systems running Intel-based LINUX, Berkeley Standard Distribution and Santa Cruz Operation UNIXes, DEC's Ultrix, Hewlett-Packard's HP-UX, IBM's AIX, and Silicon Graphics' IRIX. To receive a free usage code and instructions for obtaining the right version of TIA for a two-week trial period, send E-mail to Cyberspace Development's inquiries mailbox, or call the program's commercial single-user distributor, SoftAware.

- **The Internet Adapter** \$25; Cyberspace Development, TIA=info@marketplace.com; SoftAware, 310/314-1466
Reader service no. 725

How Fast UART?

Q I am considering purchasing a serial-port card with a 16550A Universal Asynchronous Receiver-Transmitter chip (UART) to use for high-speed modem communications. At what modem speed is it really necessary to have a 16550A UART? I've heard that you only need it for 28,800-bit-per-second connections, but I've also heard

that you need one if your modem runs at or above 9600 bits per second.

WildWeasel, America Online

A Unfortunately, both bits of hearsay could be true. The 16550A buffers data better than earlier UARTs such as the 8250, 16450, and 16550 (without the A). However, the UART is only one element in the complex pathway that links your computer to a remote system. The modems, software, and overall speed of the computers on each end of the connection may have more effect than the UART does on the connection's stability and speed.

If you have trouble connecting reliably at 9600, 14,400, or 19,200 bps using an older UART, you should try tweaking other aspects of your setup before you run out and buy a \$50 I/O board. (For tips on maximizing communications speed under Windows, see "Tips to Supercharge Windows," December 1994.) If you are thinking about purchasing a 28,800-bps modem and are concerned that your system's existing UART won't be able to keep up with it, consider an internal modem, which will come with its own on-board UART.

Exceptional File Deletion

Q I often need to delete all the files in a directory *except* those of a specific type (for example, everything but the EXE files). Is there a DOS command that will allow me to do this? I'd like to avoid using a file management shell to select each unwanted file, and I'm definitely tired of deleting files individually.

Michael Cook, Blacksburg, Virginia

A Each new version of DOS incorporates lots of little command enhancements, but the DEL/ERASE command remains about as plain as soda water. In DOS version 4.0 and later, you can use the /P switch, as in DEL *.* /P, to have DOS prompt you to confirm the deletion of each file.

However, I've written a batch file called DELX.BAT (**FIGURE 1**) that allows you to specify one or more (up to nine)

extensions as parameters and then deletes all the files in the current directory except those with the specified extension(s). (DELX.BAT is also available on PC World Online.) To use the batch file, enter **DELX** followed by a space and the extensions (without the period or any wild-card characters) of the files you don't want to nuke, with each extension separated by a space (for example, DELX COM EXE BAT). DELX.BAT uses the DOS command ATTRIB to hide the keepers, deletes everything else, then uses ATTRIB again to bring back the hidden files. A word of warning: Use DELX.BAT as carefully as you would the DOS commands DEL or ERASE—you don't want to have to recover accidentally erased files.

DELX.BAT does have a few limitations: It can't rehide existing hidden files (although it does show you a list of any hidden files first, with a reminder to hide them again after the batch file is done). DELX.BAT won't let you skip deleting individual files—only entire groups that share the same extension. And it won't let you skip deleting files that don't have an extension. A determined batch programmer could probably find a way around the latter two exceptions; space limitations prevent us from doing so here.

It Just Doesn't Register

Q I recently launched Excel 5.0, only to be greeted by an error message telling me that one of the program's object libraries was missing or damaged. I tried reinstalling the program, but I still get the same message. Is the problem with Excel, or with something else in Windows?

Richard Tuckerby, Louisville, Colorado

A The problem is with Windows, not Excel. Windows uses the registration file REG.DAT to keep track of some aspects of file association, as well as of Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE) relationships. The bad news is

USER GROUP OF THE MONTH

Space Coast PC Users Group

February's user group tips are supplied by the Space Coast PC Users Group in Cocoa, Florida. The SCPCUG holds its meetings on the fourth Monday of the month at the Central Brevard Library, 308 Forrest Ave. Members of the group receive a 40-page monthly magazine that includes software and hardware reviews, a trade briefs column, listings of support volunteers, and shareware listings. SCPCUG maintains over 10GB of shareware and public-domain software—much of it available at the monthly meeting; the rest on the group's bulletin board service (BBS). Special interest group topics include DOS, Windows, WordPerfect, dBASE, Quicken, investments, telecommunications, and education.

Contact president Ed Hughes at P.O. Box 369, Cocoa, FL 32923-0369; or send E-mail to ed.hughes@techtalk.com to get more information. You can reach the group's BBS at 407/635-8833. General meetings are open to the public, and membership for a family costs \$25 a year.

Reader service no. 726

A QUICK SAVE: Save your File Manager or Program Manager settings in a flash by holding down the <Shift> key and then double-clicking the application's Control menu icon (the box containing a long bar and located on the left end of the title bar). If you use this method, though, remember to turn off **Options • Save Settings on Exit** in Program Manager.

Jim Stripling
Space Coast PC Users Group



that REG.DAT can occasionally go haywire. The good news is that for the most part it's easy to repair—in fact, if you give it just a little helping hand, it will repair itself to a large degree.

The biggest problem with a corrupted REG.DAT file—one that you've encountered—is that you may not know it's corrupted. You may notice that double-clicking files in File Manager generates an error message instead of opening the files in the proper application. Or you may receive a message that a particular OLE service failed, or that some portion of an OLE- or DDE-enabled application itself is corrupted. The only way to know for certain that your REG.DAT file is corrupted is to run Windows' undocumented registration database editor utility, REGED-

IT.EXE (see **FIGURE 2**), which will clearly inform you if the registration database file is corrupted. To run the program, select **File•Run** in either Program Manager or File Manager, enter **REGEDIT** in the Command Line box, and select **OK**.

If REG.DAT is in fact corrupted and you haven't a backup, you'll have to recreate it. The easiest way is to exit Windows, delete REG.DAT from the WINDOWS directory, then restart Windows. When Windows doesn't find REG-

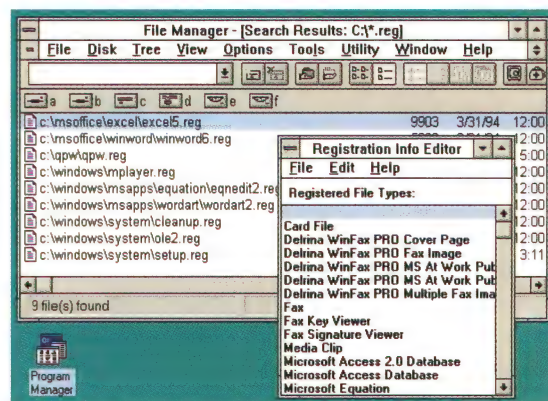


FIGURE 2: FIX A CORRUPTED REG.DAT FILE by deleting it, then exiting and restarting Windows.

blank lines may actually contain REG.DAT entries that aren't displaying due to an incompatibility with OLE 2.0.

A Second Opinion on Fast Clocks

Dayton, Ohio, reader Amin Ismail (of the University of Dayton's Department of Electronic Engineering Technology) writes: The problem with Mr. Singh's system and its clock that gains 15 minutes a day ("Call Time," *Help Line*, August 1994) could well be a low CMOS battery voltage. In my experience with several 386DX system boards, I have noticed that when the CMOS battery reaches a critical level and before the CMOS setup info is wiped out, the real-time clock that's built into the chip will start to run fast. This is because the chip probably makes use of a resistor-capacitor circuit time constant to maintain the time base for the real-time clock. In such circuits, drastic changes in power supply voltages will usually speed up the internal clock used for the time base. The board probably was manufactured years ago (being a 386) and has been sitting on a shelf, with the battery gradually draining. His best bet is to leave the system on for a few days until the battery charges up to a reasonable level (assuming it's rechargeable); better still, he could replace the battery.

By Scott Spanbauer

Scott Spanbauer is a contributing editor for PC World. Help Line welcomes your questions (see page 12 for contact information).


```
@echo off
if %1==z goto delall
set paramtrs=%1 %2 %3 %4 %5 %6 %7 %8 %9
echo %paramtrs% | find "." >nul
if not errorlevel 1 goto usage
dir /ah /b | find "." >nul
if errorlevel 1 goto hide
echo After %0 is done, use the DOS command
echo "ATTRIB +H filename" to hide these files:
dir /ah /b /p
echo.
:hide
attrib +h *.*1
shift
if not %1==z goto hide
echo Are you sure you want to delete all files
choice /c:yn except those ending with %paramtrs%
if errorlevel 2 goto cleanup
echo Y | del *.* >nul
:cleanup
attrib -h *.*
goto fin
:delall
del *.*
goto fin
:usage
echo Follow %0 with one or more extensions;
echo do NOT include the period or any wild-card
echo characters. For example: %0 TMP BAK CHK
:fin
set paramtrs=
```

FIGURE 1: DELX.BAT DELETES ALL FILES in the current directory except those with extensions you specify.

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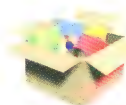
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Understanding Linked Formulas in 1-2-3

Q I've been trying to link my worksheets in 1-2-3 release 4.0, and I'm seriously confused. I want to link values from a data worksheet to formulas in the statements for my company's annual report. I had no problem creating the formulas, but when I saved the files and reopened them later, some of the formulas displayed ERR and some did not reflect the most recent changes in the detail worksheet. How do these formulas work?

Herman Wentwiler, Eugene, Oregon

A You've run smack up against the peculiarities of 1-2-3's file linking. The reason you're getting ERR mes-

sages is because 1-2-3 makes it too easy to build a formula that refers to an invalid file name. When you update that formula using the Edit Links command, 1-2-3 displays ERR.

Let's suppose that your annual report worksheet is called STATEMENT and you want to link it to a data file called DETAIL. If you use the mouse to build a linking formula such as @SUM(<<DETAIL.WK4>>A:B2..A:B5), 1-2-3 includes the name of the linked file automatically. But the name has to exist already. If you link a formula to a new file you haven't yet named, the linking formula ends up reading something like @SUM(<<>>A:B2..A:B5) or @SUM(<<FILE0001.WK4>>A:B2..A:B5).

When you update the links, 1-2-3 displays the ERR messages because the formula still refers to the wrong file. The cure for this situation is to locate the linking formulas that display ERR and edit them to include the file name. If you have a lot of formulas to fix, you can use *Edit•Find & Replace* to change the erroneous file references. For information on how to set up links to avoid such problems, see **FIGURE 1**.

A cautionary note: Since 1-2-3 doesn't update links automatically, you must remember to update them with *Edit•Links* to avoid potentially dangerous errors in your financial statements.

Printing a Collection of Columns in Any Spreadsheet

Q You would think that the answer to the question I have would be easy to locate in my spreadsheet's documentation, but it isn't.

I want to print rows 1 through 45 in columns A, C, F, and G in my 1-2-3 release 4.0 worksheet. I selected A1:A45, pressed the <Ctrl> key, selected the other ranges, and printed. But each column came out on a separate page. How can I get the program to print the columns side by side?

George Ramirez, Philadelphia

A Instead of selecting the columns that you want to print, you should hide all the columns that you don't want to print.



First click the column heading to select column B, then select *Style•Hide*. In the resulting dialog box, click *OK*, then repeat the procedure on the other columns you want to hide. Select the print range, A1..G45, and print away.

The same procedure works in Excel and Quattro Pro for Windows. Select the first column, then hold down <Ctrl> and select the others. In Quattro Pro, use *Properties•Current Object•Reveal•Hide* and select *Hide* in the Operation box. In Excel, use the command *Format•Column•Hide*.

Build the files you want to link, but be sure to save them before building the linking formulas.

DETAIL.WK4

	A	B	C
1			
2	DATA		10
3			10
4			10
5			10

STATEMENT.WK4

	A	B	C
1			
2	TOTAL		
3			
4			
5			

Create the linking formulas. 1-2-3 includes the proper file names.

DETAIL.WK4

	A	B	C
1			
2	Data		10
3			10
4			10
5			10

STATEMENT.WK4

	A	B	C
1			
2	TOTAL		40
3			
4			
5			

@SUM(<<DETAIL.WK4>>A:B2..A:B5)

To refresh the linking formulas, choose Edit•Links. In the Link Type box, select File Links and click Update All.

DETAIL.WK4

	A	B	C
1			
2	DATA		20
3			20
4			20
5			20

STATEMENT.WK4

	A	B	C
1			
2	TOTAL		80
3			
4			
5			

FIGURE 1: TO CREATE RELIABLE LINKED FORMULAS in 1-2-3 release 4.0, save both files with names before building the formulas. Remember to update the linked formulas to refresh the results.

Calculating Employee Shifts in Excel

Q For our retail business, which has nine employees, I'd like to set up a shift schedule in Excel. The store is open five days a week, 24 hours a day. The first shift (8 a.m. to 4 p.m.) requires seven employees, while the second and third shifts (4 p.m. to midnight and midnight to 8 a.m.) require one employee each. We rotate the night shifts: Each employee takes seven weeks on shift one, one week on shift three, then a week on shift two. I need to keep track of who is on which shift each week. I've tried a couple different layouts, but I can't figure out how to avoid doing lots of manual calculation. Can you get me started?

Dante Nash, London, Ontario, Canada

A It's an interesting challenge, and one that neatly illustrates how the INDEX and VLOOKUP functions can be used to create a flexible, maintenance-free setup. The model shown in **FIGURE 2** suggests how you might set it up. The table located in A12:F22 shows five

weeks of shift schedules for each employee, beginning with the date you enter in B13, named ThisWeek.

At the top of the worksheet, cell C2, named StartDate, contains the date on which the rotation sequence begins, while the table named Rotations, D2:D10, shows the progression of shifts over a nine-week span. An alphabetized list of employees, named Roster, in A2:B10, assigns each person a rotation number. Koufax, whose rotation number is 1, begins at the top of the rotation sequence, and thus changes to shift 3 after seven weeks; similarly, Leonard, who is number 6, starts at position 6 in the rotation sequence, and goes to shift 3 after two weeks.

The trick here is the INDEX formula in B14. For the week starting at the date in B13 (ThisWeek), INDEX determines the employee's position in the rotation sequence; then, based on the employee's rotation number, it assigns the appropriate shift. The shifts shown in B14:F22 are for weeks six through ten. The formula shown at the bottom

Start by entering the labels and values in A1:D10. In order for the VLOOKUP functions in the table to work, the list in A2:B10 must be in alphabetical order.

Enter and align the label Week in A12. Enter the labels in A13:A22 and the date in B13.

Use Insert • Name • Define to create the range names.

Enter and copy the formulas.

	A	B	C	D	E	F
1	Person	Rotation #	Start Date	Rotation Sequence		
2	Koufax	1	1/2/95	1		
3	Lajoie	2		1		
4	Landis	7		1		
5	Lazzeri	4		1		
6	Lemon	9		1		
7	Leonard	6		1		
8	Lindstrom	3		1		
9	Lloyd	8		3		
10	Lombardi	5		2		
11						
12			Week			
13	Person	2/6/95	2/13/95	2/20/95	2/27/95	3/6/95
14	Koufax	1	1	3	2	1
15	Lajoie	1	3	2	1	1
16	Landis	1	1	1	1	1
17	Lazzeri	2	1	1	1	1
18	Lemon	1	1	1	3	2
19	Leonard	1	1	1	1	1
20	Lindstrom	3	2	1	1	1
21	Lloyd	1	1	1	1	3
22	Lombardi	1	1	1	1	1

Range Names

Roster	=A\$2:\$B\$10	StartDate	=C\$2
Rotations	=D\$2:\$D\$10	ThisWeek	=B\$13

Formulas

C13, copy to C13:F13 =B13+7
 B14, copy to B14:F22 =INDEX(Rotations,MOD(INT((ThisWeek-StartDate)/7))+VLOOKUP(\$A14,Roster,2)-1,ROWS(Roster))+1)

FIGURE 2: THIS EMPLOYEE SHIFT SCHEDULE uses Excel's INDEX and VLOOKUP functions to accommodate changes in the rotation sequence.



POWERTIP no. 315

Quick Keys Make Quicken Quicker

Do you ever want to jump quickly to an account in Quicken without going back to the main menu? From the Select Account menu, choose the account to which you want quick access and press **<Ctrl>+E**. In the resulting dialog box, select Quick Key Assignment, enter a number between one and nine, and press **<Enter>** twice. The next time you want to get to that account from anywhere in Quicken, simply press **<Ctrl>** and the assigned number.

Steve Bass
Contributing Editor

of Figure 2 is copied into the entire table at B14:F22.

Here's how it works: $\text{INT}((\text{ThisWeek}-\text{StartDate})/7)$ calculates the number of weeks elapsed from StartDate to ThisWeek. $\text{VLOOKUP}(\$A14,\text{Roster},2)$ looks up the rotation number of the employee named in A14 from the table named Roster, A2:B10. Adding these together yields a number that indicates the employee's position in the rotation sequence for the current week. The MOD function takes that number and produces an index that rolls over to 1 every nine weeks, where nine is the number of employees calculated by $\text{ROWS}(\text{Roster})$. Finally, the INDEX function uses that number to pluck the shift number from the Rotation sequence, D2:D10.

The major attraction of this model is its flexibility. You can change the rotation numbers or the rotation sequences, or insert a row between rows 2 and 10 to enter a new employee. The table automatically assigns the proper shifts.

By Richard Scoville

Richard Scoville is a contributing editor for PC World and a software training consultant based in Chapel Hill, North Carolina. Spreadsheets welcomes your questions (see page 12 for contact information).

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Q When I launch Word for Windows, I normally load an existing document or use a customized template to create a new one. I don't want the default empty document that always appears when the program starts up. Is there a way to get WinWord to start without loading Document1?

A This one's easy to solve. To start WinWord without loading any document, blank or otherwise, just use the program's /n command-line switch. First, go to Program Manager and highlight the WinWord icon with a single mouse click. Select *File•Properties*, then tab to the Command Line text box. Press <End> to move to the end of the command line, just past WINWORD.EXE. Type a space, then /n.

Click *OK*, and you're done. (Incidentally, this tip works for all versions of Word for Windows.)

Q I recently upgraded from Word for Windows 2.0 to version 6.0. It seems like a great improvement on the old version, but I miss the Caps indicator on version 2.0's status bar that told me when I had Caps Lock on. Instead of Caps, WinWord 6.0 offers another set of indicators I haven't figured out yet. How do I get my Caps indicator back?

A I'm afraid your Caps indicator is gone for good in WinWord 6.0. Version 6.0's status bar is different from version 2.0's, and unlike most other elements of WinWord's screen, it cannot be customized. It looks as if you will

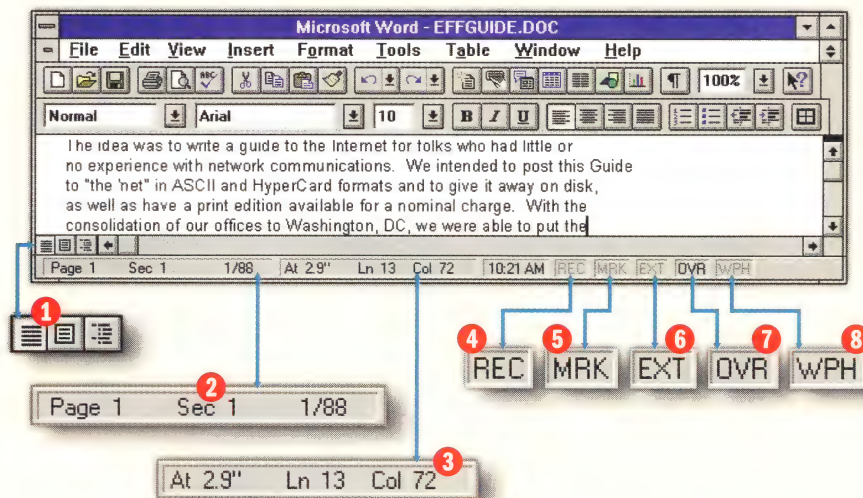
have to rely on your keyboard's LED to let you know when Caps Lock is on.

Despite the loss of the Caps indicator, WinWord 6.0's status bar still offers tons of useful information (see **FIGURE 1**). Of course, if your screen real estate is limited, you can turn off the status bar altogether. To do this, select *Tools • Options*, click the *View* tab, and unmark the Status Bar check box.

Now that I've switched from WordPerfect 5.1 for DOS to version 6.0 for Windows, I can't figure out how to search for hard (or carriage) returns inside my documents. I often need to do this to remove carriage returns in ASCII electronic-mail files. With the old DOS version, I could insert a hard return (HrT) code in a search or replace command simply by pressing the <Enter> key. Now pressing <Enter> just exits the Find or Replace dialog boxes. Isn't there some way to perform this common function?

A I too was sad to see WordPerfect lose this capability when it moved from DOS to Windows. Unfortunately, Windows uses the <Enter> key to execute the default command in dialog boxes, so WordPerfect for Windows had to come up with a different way to insert HRt codes. Here's what to do.

First, load the document that you want to search, and select *Edit•Find*. In the Find Text dialog box, select *Match•Codes*. When the Codes dialog box pops up, type **hrt** to jump quickly to the *HRt* code in the list. Select *Insert* or press **<Enter>** to pop the code into the Find dialog box. If you want to search for additional codes, you can select them from this list as well. When you're done inserting codes, select *Close* to return to the Find dialog box, and press **<Enter>** to initiate your search. (You can follow the same steps to search for codes using *Edit•Replace*.)

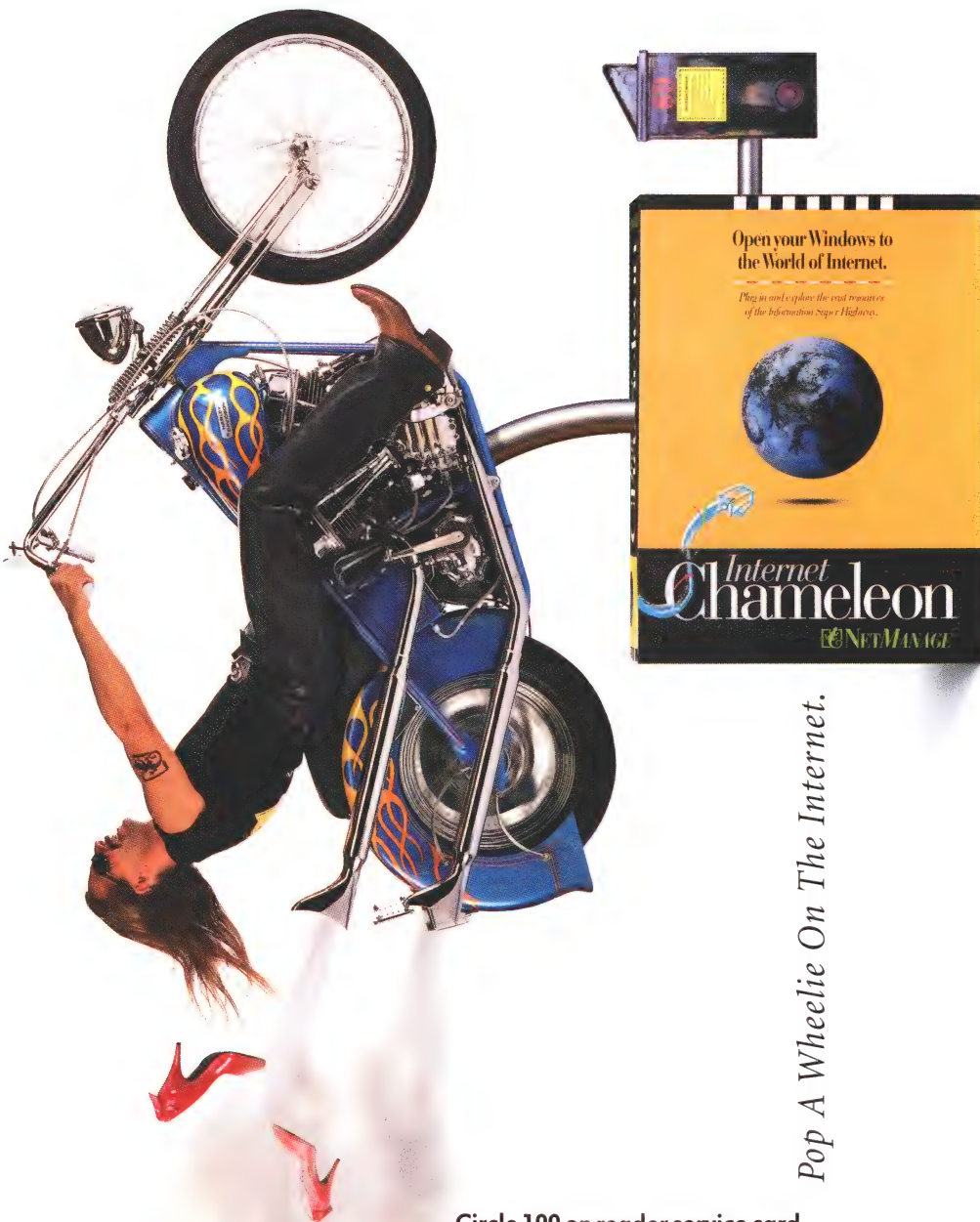


- 1 Lets you switch between Normal, Page Layout, and Outline views, respectively.
- 2 Displays the current page and section numbers, as well as relative position in the document (for example, page 1 of 88).
- 3 Displays the horizontal and vertical position of the cursor on the page.
- 4 Calls up Word's Record Macro dialog box.
- 5 Lets you set revision-marking options.
- 6 Lets you extend the current text selection using cursor keys or the mouse.
- 7 Toggles between Insert and Overtyping modes.
- 8 Lets you access Help for WordPerfect Users.

FIGURE 1: WINWORD 6.0'S STATUS BAR puts a wealth of information at your fingertips. The display bars on the left give you the lowdown on your document, while buttons on the right let you access tools with a double-click of the mouse.

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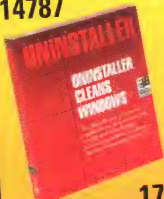
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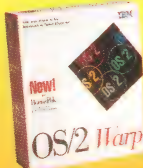
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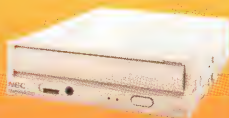


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Online Support for WordPerfect 6.0

Q Ever since WordPerfect started to charge for phone support, I've been looking for alternatives, especially when I have questions that don't need an immediate answer. I tried the WP-FILES forum on CompuServe, but WordPerfect won't answer technical questions there. Apparently that forum is used only to provide updated drivers and other files. Is there any place on CompuServe where I can ask questions about WordPerfect 6.0a for Windows?

Alice Johnson, Ventura, California

A As you've discovered, WordPerfect dropped its CompuServe support forum shortly after WordPerfect 6.0 appeared. But all is not lost. CompuServe also provides a WordPerfect Users Forum, staffed by knowledgeable volunteers who can answer most questions. To access this handy area, log on to CompuServe and issue the command **GO WPUSERS**. If you use America Online, you can find similar help in the WordPerfect Magazine section; the keyword is **WPMAG**.

Save Your WordPerfect Work Space

Q Whenever I use WordPerfect 6.0a for Windows, I work on the same set of documents. It's tiresome to reload those documents and rearrange them on screen every time I start the program. Isn't there some way I can set WordPerfect to start with those documents always loaded and arranged the way I want them?

Brad Ericson, Columbus, Ohio

USER GROUP TIP**Quick Click Blocks**

To quickly make a multipage text selection in WinWord, Ami Pro, or WordPerfect for Windows, click the point where you want the selection to begin; scroll or use **Edit • Go To to move to the end of the selection; hold down **<Shift>**; and click where you want the selection to end. This technique is much faster than dragging your mouse through a long document.**

Ed Hughes
Space Coast PC Users Group

A Sure. WordPerfect 6.0a can solve your problem easily. Start by setting up your documents and arranging their windows the way you like them. Then select **File • Preferences** and double-click the *Environment* icon. In the Environment Preferences dialog box, go to the *Save Workplace* frame and mark the *Always* option. Click **OK**, then **Close** to return to the editing window.

Now whenever you exit WordPerfect, it will save your documents and your screen layout. When you restart, everything will be just as you left it. Or, if you'd like the option to discard your work space arrangement at the end of a session, check *Prompt on Exit* instead of 'Always'. That way, WordPerfect asks each time whether to save the work space before leaving the program.

Altering Ami Pro Menus

Q I recently installed SoftKey's Correct Grammar to work with Ami Pro 3.01. After testing it, I discovered I preferred Ami Pro's internal grammar checker, so I deleted Correct Grammar from my hard disk. Unfortunately, that left me with two new and unwanted commands in my Tools menu, apparently put there by Correct Grammar. For the life of me, I can't figure out how to remove them. Can you help?

Brett W. Kirby, Weidman, Michigan

A This is one of the reasons all programs should have uninstall options. Still, your situation is far from hopeless. To add or remove items from Ami Pro's menus, you need to use the AMI-MENUS.SMM macro that comes with the program.

If you elected to omit macros when you installed Ami Pro, you'll need to add them now. Load Ami's original disk 1 into your floppy drive and run **INSTALL.EXE**. Follow the on-screen instructions until you reach the Install Options dialog box, then select *Customize features—Manual install*. When you see the Customize dialog box, deselect all options except Sample Macros and continue the installation.

To use the macro, launch Ami and select **Tools • Macros • Playback**, then double-click *amimenu.smm* in the Mac-

ros list box. In the Customize Ami Pro dialog box, press **T** to jump to *Too&ls* in the Menus list box, then click the *Delete a menu item* button. (Note: The ampersand in the menu item precedes the letter used as an **<Alt>**-key shortcut in Ami's menus.) In the next dialog box, choose the submenu item you want to delete and click **OK**. Then select *Yes* when Ami asks if you want to make the change permanent. Repeat this process until you've deleted all references to Correct Grammar in the Tools menu; then select *Done*.

Demystifying Ami's Save Command

Q I think I've discovered a problem with Ami Pro 3.01. I often use one document as a basis for another. I make changes, then select **File • Save As** to give the new document a different name. What's happening is that sometimes the old document changes, too. I'm confused and hope you can help me out of this jam.

Diane Duplissis, Boulder, Colorado

A I had to think about this one for a minute before I figured out what's going on. Your original document is changing because you have Ami Pro's Auto Timed Save option turned on. As you make changes to the original document, planning to save them under a different name, Ami Pro blithely saves your changes automatically at regular intervals. There are two solutions.

Your first option is to turn off Ami's automatic save feature. To do this, select **Tools • User Setup**. In the User Setup dialog box, unmark the Auto Timed Save check box and click **OK**. Or, if you want to continue to save automatically, you'll have to change your work habits. Instead of using the **Save As** command *after* you make changes, save your original document with a different name *before* you alter it. That's the best way to ensure your changes go into the new file, not the old one.

By George Campbell

George Campbell is a contributing editor for PC World. Word Processing welcomes your questions (see page 12 for contact information).

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CARD 102

WINDOWS Q & A

Comparing Directory Windows

Q I have only one floppy drive. Sometimes when I'm in File Manager, I want to see directory windows of two different floppies so I can compare their contents. I've tried double-clicking the A: drive icon to open the first directory window, then swapping disks and double-clicking the icon again. But what I get are two windows, each listing the contents of the first floppy. How do I get a window for each of them?

Dale Anderson, Pierre, South Dakota

A Annoying, isn't it? This is a problem with File Manager, which refuses to show different directory windows for

floppies that use the same drive letter. Don't press <F5> to update the directory window; that'll just give you two listings of your second floppy.

So what do you do? Put the first disk in your floppy drive and double-click the A: icon. When the directory comes up, remove the floppy and insert the other one. Now here's the clever part: Choose *File • Search*, and make sure the Search For text box contains *.* and the Start From text box has A:\. If you want to look at files in all of your floppy's

subdirectories, make sure that

Search All Subdirectories is checked. Then click *OK*. File Manager provides a listing for the second floppy in its Search Results window. If you select *Window • Tile*, you can examine the two windows and compare the disks.

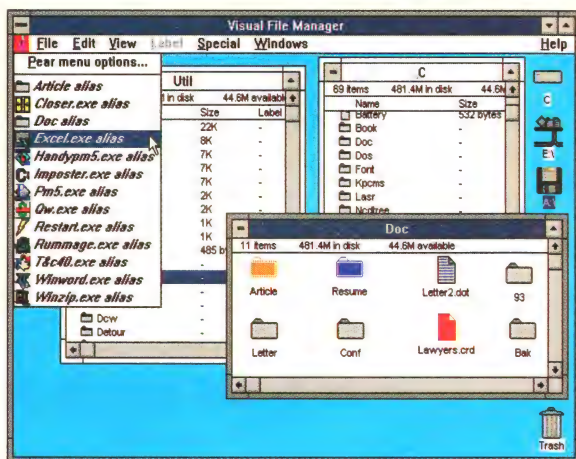
```
@echo off
if exist c:\windows\%1\nul goto switch
md c:\windows\%1
goto start

:switch
copy c:\windows\%1\*. * c:\windows

:start
c:\windows\win %2 %3 %4 %5
copy c:\windows\*.ini c:\windows\%1
copy c:\windows\*.grp c:\windows\%1
copy c:\windows\*.dat c:\windows\%1
copy c:\windows\win.com c:\windows\%1
```

FIGURE 1: SWITCH BETWEEN WINDOWS configurations with this handy batch file.

Windows Toolbox



Having trouble switching from the Mac to Windows? Tuesday Software offers instant relief with its Visual File Manager. This shareware program effectively apes the Macintosh Finder, displaying directories and files as graphical objects you can drag and drop, enliven with color, or toss in the trash can. In place of the Mac's Apple menu, Visual File Manager gives you a Pear, from which you can access frequently needed programs, directories, or files. Visual File Manager is fast, even on an old 386, and it makes barely a demand on your system resources. With its \$25 registration fee, this program has other Mac imitators beat cold. The brainchild of Scott Messier and James Owens, Visual File Manager is available as VISFIL.ZIP on PC World Online and other online services, or directly from Tuesday Software at 800/945-7889, 805/962-7889.

Reader service no. 727

Setting Up to Power Down

Q To save batteries on my notebook, I've customized Windows to manage power, using a monochrome video driver, a custom color scheme, and other power-saving choices. But when I plug in my AC adapter, I want to use the computer's color capabilities. I hate having to futz with Setup, Control Panel, and other utilities every time I switch between battery power and AC power. Is there a quick way to switch between configurations?

Sheila McGregor,
Knoxville, Tennessee

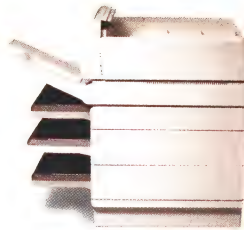
A Windows isn't very good at handling multiple configurations, but a batch file can do a lot of the work for you. Create a batch file like the one in **FIGURE 1**. Name it **NEWWIN.BAT**, and store it in a directory in your AUTOEXEC.BAT's PATH statement. If you're in Windows, exit it, then restart it with the command **NEWWIN AC**. Configure everything for AC power. When you exit Windows, the batch file will save your settings in a new WINDOWSAC directory.

Launch Windows again, this time by typing **NEWWIN BATTERY**. Set up Windows for battery power, and exit to save the settings in their own directory.

Now you're set. When you want to run Windows in the same mode you last used, just start it with the usual **WIN**. But to switch modes, type **NEWWIN AC** or **NEWWIN BATTERY**. And if you want to create other configurations, enter Windows with another **NEWWIN** parameter.

A warning: Any changes that you make to Windows when you launch it with the regular **WIN** command will be wiped out when you next run **NEWWIN**. So if you plan to change your configuration, launch Windows through **NEWWIN**. The changes will be saved to only one of your configurations, so you may want to copy them over to your other configurations.

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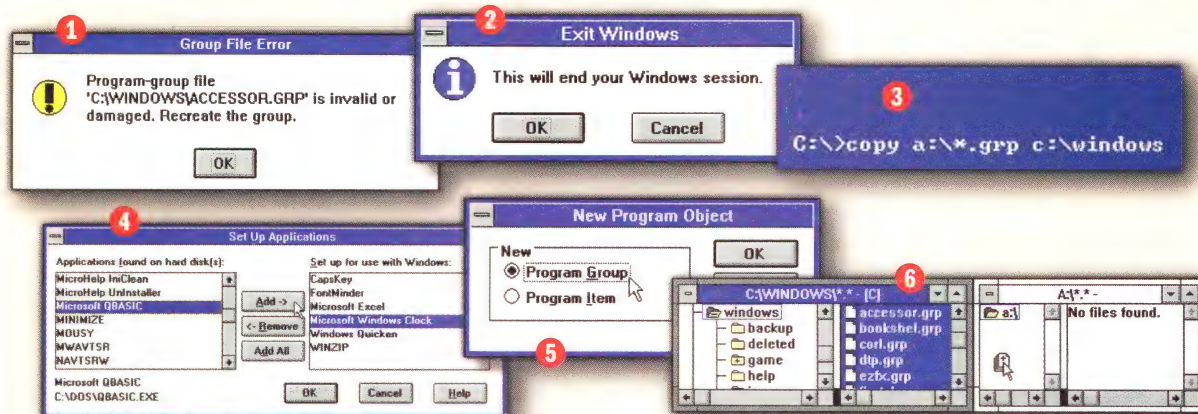
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The Six-Step Program for Windows Group Recovery

Most group recovery programs include 12 steps. PC World takes off 50 percent in this handy remedy for wayward Program Manager groups.



- 1 **Admit you are powerless over your computer.**
Pretty easy to do when Program Manager can't bring up your groups.
- 2 **Turn to a higher power—DOS—to restore your sanity.**
Exit Windows and type **SCANDISK** (DOS 6) or **CHKDSK /F** (earlier versions) at the DOS prompt to make sure your file system is intact.
- 3 **Be entirely ready to remove these defects from Program Manager.** While you're still at the DOS prompt, copy the relevant files (*.GRP and PROGMAN.INI) from your backup into your Windows directory.
- 4 **Make a searching and fearless inventory.**
If you haven't kept an up-to-date backup, you'll have to rebuild your groups. Back in Windows' Program Manager, select **File • Run**, type **Setup**, and press **<Enter>**. In the Setup program, choose **Options •**

- Set Up Applications • Search for Applications • OK.** Setup will search the drives you specify and let you select the programs you want to add to Program Manager.
- 5 **Make direct amends to Program Manager groups as needed.**
Setup puts all the programs it finds into a group called Applications. To recreate your old groups, select **File • New • Program Group • OK**, and fill in the information. Repeat as needed. Drag icons from the Applications group into the recreated groups. If Setup missed any programs, drag the files from File Manager into the appropriate Program Manager groups.
- 6 **Carry this message to your hard drive and to Windows.**
Preserve your restoration by holding down **<Shift>** as you select **File • Exit** in Program Manager. And make regular backups—at least of your GRP and INI files—from now on.

If you also want to change your AUTOEXEC.BAT and CONFIG.SYS files—say, to add a RAM disk—that's another story. Your best bet would probably be to use DOS 6.x's multiconfiguration option, which can prompt you for a choice when you boot, and can accordingly select which commands to run in CONFIG.SYS and AUTOEXEC.BAT. For details on setting up a multiconfiguration system, enter **HELP MULTI-CONFIG** at the DOS prompt. If you use an older version of DOS, various commercial and shareware programs can do the same job for you.

Group Recovery

Q A friend of mine crashed Windows and couldn't restart it. So she backed up her GRP files, reinstalled Windows from scratch, then copied her old GRP files into her WINDOWS directory. Unfortunately, the old groups didn't

show up properly in Program Manager. Is there some line that she needs to change in an INI file, or will she have to re-create each group by hand?

Jason Ludwig, CompuServe

A When reinstalling Windows, it's important not to delete your old version—just install over the old files in order to preserve your custom settings. If you delete Windows first, you'll have to reinstall your Windows applications to restore the INI and DLL files those apps have placed in your WINDOWS and WINDOWS/SYSTEM directories.

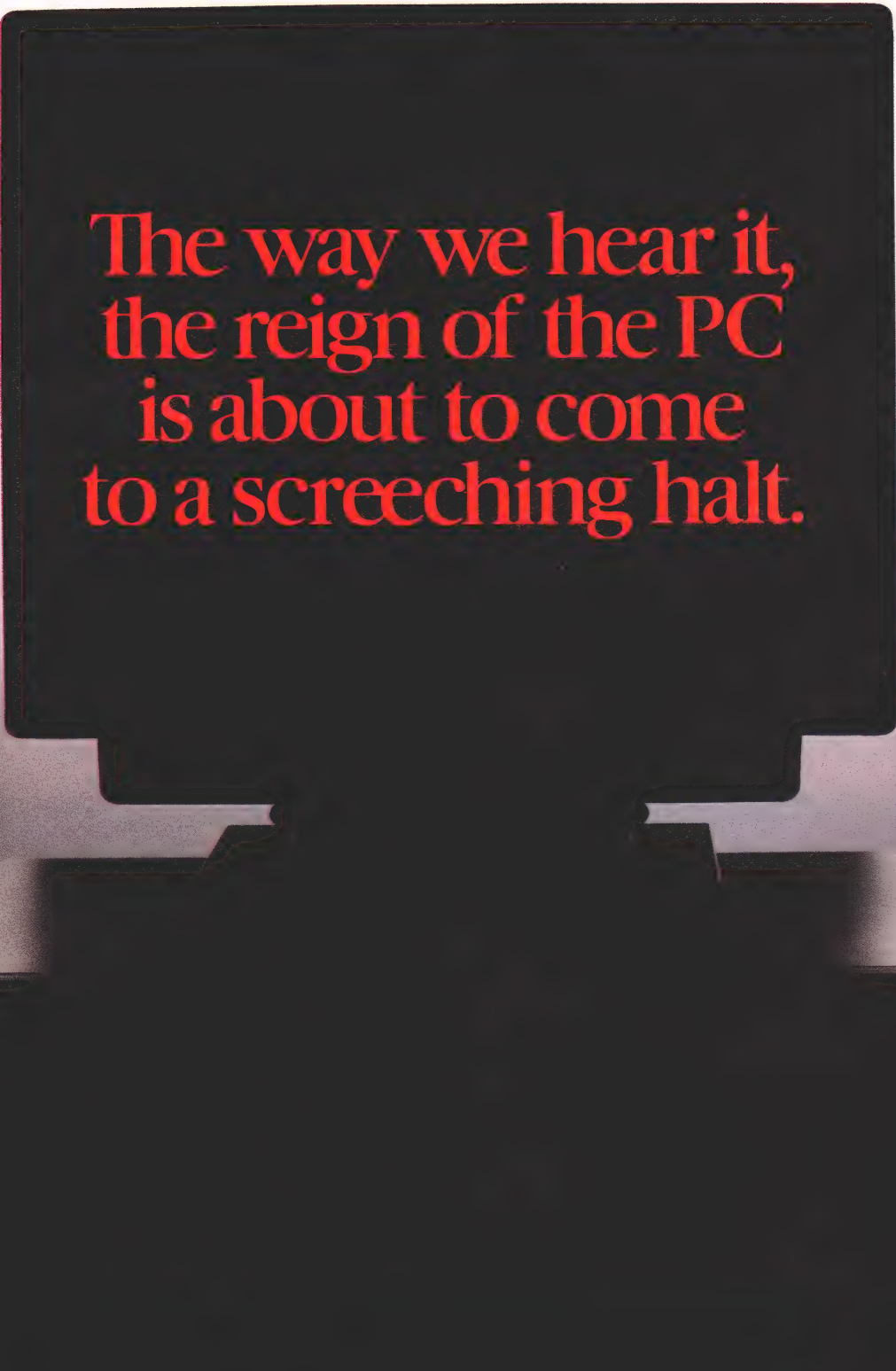
It sounds as if your friend has backups of her GRP files but not of her INI file—an unusual situation. She'll have to tell one of these files, PROGMAN.INI, about her groups again. From Program Manager, select **File • Run**, enter **progman.ini**, and press **<Enter>**. This sequence will bring up PROGMAN.INI

in Notepad. Under the [Groups] heading, add a line such as **Groupx=C:\WINDOWS\MAIN.GRP** for each GRP file. The order of the lines doesn't matter, as long as each GRP gets its own line starting with a unique number. Back in Program Manager, make sure **Options • Save Settings on Exit** is turned off before exiting and reentering Windows.

In most cases where you lose your Program Manager groups, you'll have backups of everything or nothing. See "The Six-Step Program for Windows Group Recovery" to see how best to handle this situation.

By Scott Dunn

Scott Dunn is a contributing editor for PC World and coauthor of 101 Windows Tips (Peachpit Press, Berkeley, California, 1992). Windows Q&A welcomes your questions (see page 12 for contact information).



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DATA MANAGEMENT Q & A

Monthly Cross-Tabs in Paradox 5.0 for Windows

Q I've got a Paradox 5.0 for Windows table of sales information called INVOICES.DB, and I'd like to create a cross-tab report of sales amounts by month and sales rep. There should be one row for each sales rep and one column for each month, with the sales for each combination appearing in the corresponding intersections.

The problem is that I can't see how to get the sales totals by month. In the Define Crosstab dialog box, if I choose the Date field for my column variable, I get a column for every date a sale was made. I've thought of adding a field for Sale Month to INVOICES.DB, but I don't really want to fill it in. Do you have any tips on how to do this easily?

Marlene Grasso, Chicago

A You're on the right track—you will need a field for Sale Month if you want to cross-tabulate by month. But don't worry; you don't have to fill it in manually. Follow these steps to get the cross-tab you want.

1. Use **Table • Restructure Table** to add a field called **Sale Month** to INVOICES.DB, with the field type **S** (short number). Save the new structure.

2. Select **File • New • Script** and then type the following lines between 'method' and 'endmethod', assuming

that your table is called INVOICES.DB and your date field is called Date:

```
var tc TCursor endVar
tc.open("invoices.db") tc.edit()
scan tc :
tc."Sale Month" = month(tc."Date")
endScan
tc.endEdit() tc.close()
```

With the script open, press <F8> to update INVOICES.DB, then close the script and save it if you like. The table should now look something like this:

Table: INVOICES.DB						
INVOICES: Order #	Date	Sales Rep	Customer #	Total Amount	Sale Month	
1	1001 01/03/95	Hart	256	\$514.00	1	
2	1002 01/05/95	Hart	101	\$200.00	1	
3	1003 01/12/95	Valencia	113	\$150.00	1	
4	1004 02/07/95	Reed	201	\$350.00	2	
5	1005 03/01/95	Valencia	113	\$225.00		

3. Make a form for INVOICES.DB, open it in Design mode, right-click the field object for Date, and select **Properties • Methods**. Double-click **changeValue**, type **doDefault Sale_Month = month(Date)** between 'method' and 'endmethod', and close the window. When you run the form and put in dates, Paradox enters the values in Sale Month for you.

4. To get a cross-tab, first open INVOICES.DB in a table window. Then click the Quick Crosstab tool bar button to open the Define Crosstab dialog box, which is shown in **FIGURE 1**—the dialog

box may be confusing, but just follow the instructions in the figure. You should end up with a report like the one below, showing sales totaled by month and sales rep.

Form: New				
	1	2	3	
Hart	\$714.00			
Reed		\$350.00		
Valencia	\$150.00		\$225.00	

Changing Case in Access Text

Q Is there a way to capitalize the first letter of each word in existing text in an Access file?

Jeff Drost, PC World Online

A I can show you how to use an update query in Access to capitalize the first letter in a text field, which isn't quite the same thing. If anyone out there truly knows how to capitalize the first letter of each *word* within a text field, I'd like to hear from you.

First open a new query for your file and select **Query • Update**. Then drag the name of the field you want to change into the Field row of the QBE grid's first column.

Next you must enter an expression in the QBE grid that tells Access how to change the data when you run the query. In the cell where the Update To row intersects the column you dragged the field name into, type **UCase(Mid([table name]![field name],1,1)) & LCase(Mid([table name]![field name],2))**, where *table name* and *field name* are the names of the table and field you want to change. This expression tells Access to capitalize the first character of whatever text is in the field, turn the rest of the field value into lowercase, and write the result back into the field.

To make the change, click the Tool-bar's Run button or select **Query • Run**; click **OK** to approve the change. If you open the updated table, you'll find that the entire field is the way you want it.

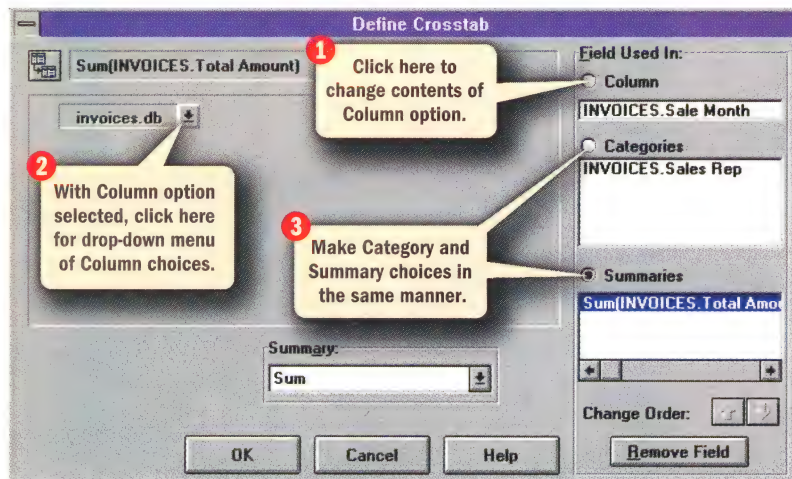


FIGURE 1: CREATE CROSS-TABS in Paradox easily by following our numbered steps.

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Circle 138 on reader service card

Combining Searches in Approach

Q I use Approach 2.1 to track responses to magazine ads. The Find feature works well to search for records that satisfy a set of criteria such as, for example, "people in New York City who contacted us after seeing the December ad."

But I'd like to look for more than one type of record at a time—perhaps the search I just described, along with "people from New Jersey who contacted us after seeing the January ad." Can I combine searches this way?

Neal Shelby, New York

A Sure. Set up your first search as you normally would. Then, before you press <Enter> to start the search, select *Records • Find More* or click the tool bar's Find button again. Approach gives you a blank form or line for additional search criteria. Enter your second search; this time, press <Enter>. Approach performs an *or* search, so called because it displays records that match one set of criteria *or* another.

**Open Memo Windows in dBASE IV**

Q I'd like a dBASE IV data entry form that shows a memo field in a window that's always open, rather than in a little box that shows nothing but MEMO until I move the cursor to it and press <F9>. Can I set up a form that has a memo window, without having to write a program?

Adele Reed, Houston

A You can easily add a memo window to your form without writing any dBASE code. In Control Center, select your form, press <Enter>, and select *Modify layout*. In the form design window, move your cursor to the notes field and select *Fields • Modify field*. Highlight *Display as* and press <Enter> to change the setting from MARKER to WINDOW. Then press <Ctrl>-<End> to return to form design. If you don't like where dBASE places the memo field box, use <F7> to move it or <Shift>-<F7> to resize it.

When you use the form, your memo text will be visible on screen. However, if you move the cursor to the memo window with <Tab> or <Enter>, you won't be able to

enter or edit text there. Move in and out of the memo window by pressing <F3> or <F4>.

By Celeste Robinson

Celeste Robinson is a contributing editor for PC World and the author of The Paradox 5.0 for Windows Handbook (Random House Electronic Publishing, New York, 1994). Data Management welcomes your questions (see page 12 for contact information). ■

**POWERTIP no. 316****Hide Excel Cells With Color**

To hide data in Excel, change the color of cell data to the color of the background. Select *Format • Font*, select **White** from the Color drop-down list, and click **OK**.

Of course, you'll still be able to see the hidden contents of the current cell in the Formula Bar.

Shane Devenshire
Walnut Creek, California

COMING UP

Test-Driving Hard Drives

Today's drives are faster, more reliable, and more compact than ever, and storage costs are down to about 40 cents a megabyte in some cases. Don't miss the ride as we review six IDE and five SCSI models.

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Whether you want to pare down a travel budget or add visuals to a speakerphone meeting, the promise of desktop video conferencing is compelling—but can this technology really live up to the hype?

Shopping the Hardware/Software Market

From showrooms to swap meets, where are the best buys for hardware and software? Our editors go undercover in search of bargains.

Also Next Month:

- ▶ Top 20 Updates on the Month's Best Budget, Power, and Mobile PCs
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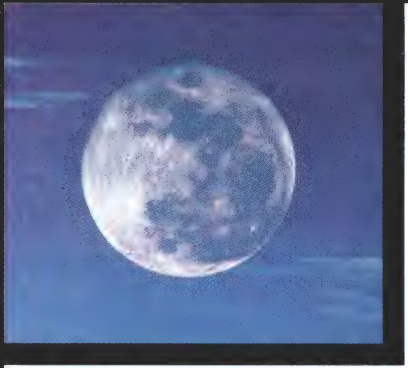
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Circle 59 on reader service card



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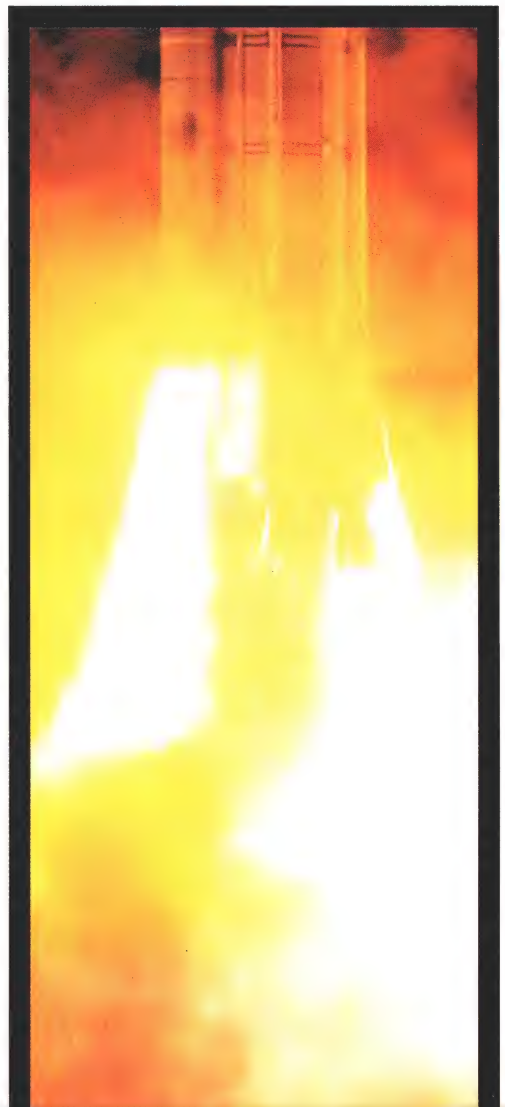
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PUBLISHING & PRESENTATIONS Q & A

Easy Business Cards With CorelDraw

Q I want to print up some business cards using CorelDraw 5 and my color laser printer. I tried pasting several copies of the same card on a single page, but the subsequent CorelDraw (CDR) file bogs down and takes too much time to save, redraw, and so forth. Got any shortcuts for doing business cards more efficiently?

Jeff Kaltenbach, Los Altos, California

A You're in luck—thanks to Corel's new Clone Frame feature, you can quickly print multiple copies of an image on a single page. Here's an example of how to do it, printing eight duplicate business cards on a single letter-size sheet of paper:

1. Select **Layout • Page Setup** to open the Page Setup dialog box. On the Size page, select **Custom** from the page size drop-down list box and **Portrait** for orientation. Set Width at **3.5** inches and Height at **2.0** inches, and click **OK**. These settings will create a drawing window the size of a business card in landscape orientation, the way most cards are meant to be read.

2. Back in the main screen, lay out the text and graphics for the card as you would for any CorelDraw document.

3. When your cards are ready, select

File • Print. If a prompt asks if you want it to automatically adjust the page orientation, select **No**.

4. In the Print dialog box, click the **Options** button. In the Layout Style section of the Layout sheet, change Rows to **4** and Columns to **2**, then select **Clone Frame**.

5. Select the **Preview Image** check box to proof how the page will print. You can add crop marks around each copy (or cloned frame) of your document by selecting the crop marks tool.

6. Click **OK** twice to close the Print dialog boxes, and print the page.

And that's it. Although you might want to experiment with different settings for page setup and orientation, I've found that the settings recommended here produce the best results. For example, if you try to print more than eight cards on a letter-size page, Corel will shrink the cards to make them fit, which results in cards smaller than standard size.

Smaller Publisher Documents

Q To reduce the file size of a Microsoft Publisher 2.0 document, I turned off the Save Preview option in the **File • Save As** dialog box and resaved the file. But even after I did this, the file size remained the same. What gives?

Ralph Brown, Internet

A Like humans, Publisher documents have trouble losing fat. When Publisher saves a preview with a document, it adds a bit-mapped image of the first page to the file. Saving a document without a preview should reduce its size, right? Wrong.

Because of a bug (one Microsoft hopes to rectify in the next

release), Publisher sets aside space for the bit-mapped preview in saved files, once you use the Save Preview option.

But don't give up. There is a workaround you can use to shed the bit-mapped preview from your document once and for all. The technique is threefold. First, copy the text and graphics from your Publisher document to the Windows Clipboard by selecting **Edit • Select All**, and then **Edit • Copy Object(s)**. Open a new Publisher document and paste the contents of the clipboard into it by selecting **Edit • Paste Object(s)**. Make sure the Save Preview option is turned off, and save the new document under a new name.

Just remember, if you never use the Save Preview option, Publisher won't add any extra weight to the file you've worked so hard to keep trim.

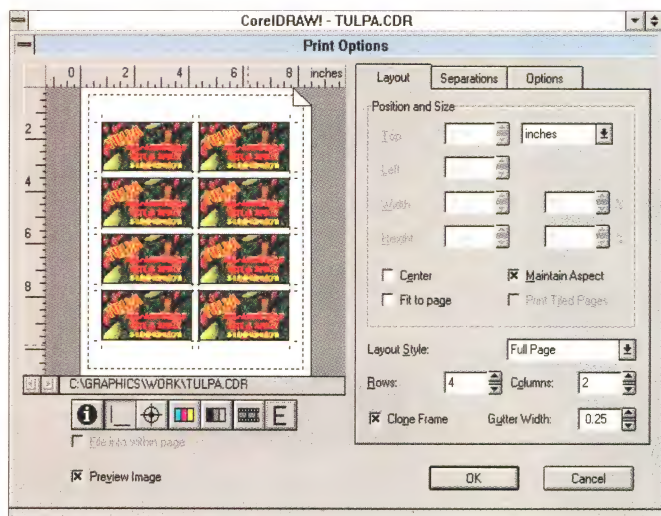
Smarter Freelance SmartMasters

Q I'd like to combine slides from two different SmartMaster sets within the same Freelance Graphics 2.0 (for Windows) presentation. But whenever I add a slide from a different SmartMaster, Freelance automatically changes the other slides in the presentation to match the new slide's design and colors. Any suggestions?

Gary Friend, Northbrook, Illinois

A Mixing SmartMaster sets within a single Freelance presentation is as hairy as a Houdini trick, and a lot less reliable. Your problem is one example of why it's so tricky.

Most SmartMaster files contain a dozen different slide layouts, with names such as Title, Bulleted List, 2-Column Bullets, 1 Chart, Bullets & Chart, and so on. But within each SmartMaster set, just one slide—named Basic Layout—calls the shots. All the other slides are based on it, so whatever fonts, colors, and backgrounds you use in Basic Layout will appear in every other slide in the set. In your case, you're trying to introduce a Basic Layout slide from one SmartMaster set into



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a presentation using a different Basic Layout slide. As a result, all the slides in the presentation take on the attributes of that new Basic Layout slide—including, most noticeably, its colors.

There is, however, a way you can combine layouts from different SmartMaster sets within the same presentation file. The trick is to rename the Basic Layout slide from the second SmartMaster set before you paste a copy of it into your presentation.

For instance, here's how you would combine slides from two SmartMaster sets, WORLD1.MAS and WORLD2.MAS.

1. Select **File • New**, and in the Choose a Look dialog box, select **WORLD1.MAS**. Click **OK**, and when the Choose Page Layout dialog box appears, click **OK** again.

2. Select **Edit • Edit Page Layouts**; the word 'SmartMaster' should appear in the top left corner of the screen, with 'Untitled1' as the temporary file name. Select **View • Page Sorter** to display all page layouts in the WORLD1.MAS SmartMaster set.

3. Now repeat steps 1 and 2, but this time select **WORLD2.MAS**.

4. Select **Window • Tile** to display both Untitled1 (WORLD1.MAS) and Untitled2 (WORLD2.MAS).

5. Select the **Basic Layout** slide from Untitled2; the slide title should appear in an editing box just below the menu bar. Insert the cursor after the slide title, 'Basic Layout', and change its name by typing **1** (so it's now 'Basic Layout1'). Press **<Enter>**.

6. Select **Edit • Copy** to copy the renamed slide to the Clipboard.

7. Now click the Untitled1 window to make it current. Select the **Basic Layout** slide, then choose **Edit • Paste** to add a copy of Basic Layout1 to the file.

8. Select **File • Save As** and set the 'File types' option as **SmartMaster Set (MAS)**. Give the combined SmartMaster set a new name, such as **WORLD3.MAS**, to distinguish it from the others.

That's it. You can now select other slides from WORLD2.MAS and add them to WORLD3.MAS without changing other slides in the presentation. After you've finished setting up WORLD3.MAS, save the file. The next time you open a new presen-

tation, you'll find WORLD3.MAS displayed as a SmartMaster set option in the Choose a Look dialog box.

By Richard Jantz

Contributing Editor Richard Jantz is an electronic publishing and presentations consultant in Berkeley, California. Publishing & Presentations welcomes your questions and makeover candidates. See page 12 for contact information. ■



POWER TIP no.317

Quick Tags in WordPerfect for DOS

When you want to tag all of the files in a WordPerfect 5.1 for DOS List Files screen or a WordPerfect 6.0 for DOS File Manager screen, don't use **<Shift>8 (*)** to tag files one at a time. Instead, press **<Alt>-<F5>** to tag all of them simultaneously.

William Rothernal
St. Louis, Minnesota

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Waiting On ISDN

Q With all the talk about the information superhighway, I'm really interested in buying a high-speed modem. But people tell me that the phone system will become totally digital, making modems obsolete. So should I buy a modem now or wait until all phone lines become digital?

Raymond Chi, San Francisco

A A digital phone service called ISDN (Integrated Services Digital Network) is coming to many businesses and possibly to our homes, but the costs and benefits for the average consumer aren't yet certain.

ISDN splits an ordinary phone line into three high-bandwidth channels, making it capable of transmitting multiple channels of voice, data, and video simultaneously. Regular phone switches transmit analog signals as rising and falling voltages; modems act as translators between this analog language and your PC's digital dialect. Because ISDN transmits data as binary bursts, you don't need a modem.

However, you do need to attach an ISDN device to your PC, and one of those currently runs about \$500—a lot more than a standard modem. You'll also have to pay your phone company an extra \$20 to \$40 per month to get an ISDN phone line, depending on where you're located, plus hourly connect fees

that run from pennies to dollars, depending on where you're calling.

For businesses, especially those that use video conferencing or rely on wide area networks to link geographically diverse locations, ISDN may be cost-effective. But at these prices, ISDN is still an expensive toy for average consumers—if they can even get it. Outside major cities, most areas of the country don't have ISDN service and may not for a long time.

Even if you do have ISDN on your telephone line, you'll still need your old-fashioned modem to call online services and bulletin boards that don't yet support ISDN. At press time CompuServe and America Online have announced plans to offer ISDN links to consumers on a nationwide basis; Prodigy is testing ISDN links with Pacific Bell. In fact, 64-kbps connections to CompuServe may be available by the time you read this. CompuServe doesn't yet know what it will charge for ISDN access or to what extent ISDN will be available around the country.

These online links should give you wonderfully fast software downloads. In addition, theoretically at least, they should put an end to the telephone-line noise that frequently disrupts computer communications.

Getting On Internet Mailing Lists

Q I subscribe to CompuServe and America Online. I've heard about Internet mailing lists. What are they, and can I get them from either of these services?

*Rebecca Pennington,
River Falls, Wisconsin*

A An Internet mailing list is a quasi-private discussion on a selected topic. Once you've subscribed to a list, new messages posted to it appear in your private E-mail box. You can read and respond to them just as you do private mail, except that all other subscribers receive your responses. Thousands of mailing lists, spanning topics from wear-

able art to the Boston Bruins, exist on the Internet. Many professional organizations run mailing lists.

To find one that suits you, first get a directory of mailing lists. From CompuServe or America Online, send an Internet message to listserv@bitnic.bitnet. The first line of the message should read **list global**. You'll receive a file about half a megabyte long listing all the mailing lists on Bitnet. You should also download the file MAILST.ZIP, available in CompuServe's Internet Forum (type **go internet** at any prompt) in the Mailing List library.

These files give directions on how to subscribe to individual mailing lists; read them carefully. For some, all you do is send an Internet message, containing the single word 'subscribe', to the listed address. Other lists require a single line reading 'subscribe *mailing_list_name your_name*', as in 'subscribe bongo-love john smith'. Unless you are sure a machine is answering the mail, Internet etiquette dictates that you send a polite query to the individual managing the list. Also, keep in mind that you may not be admitted to every mailing list.

When you join an Internet mailing list, you'll receive an introductory E-mail message containing instructions and commands. Save it for future reference. Some mailing lists generate hundreds or even thousands of messages a week. To keep your online bills down, ask for the mailing list's digest version, which gives you the mail in one large condensed E-mail message each day. You can find instructions on requesting that option, if it's available, in your introductory message.

By Judy Heim

Judy Heim is a contributing editor for PC World and author of I Lost My Baby, My Pickup, and My Guitar on the Information Highway from No Starch Press (Daly City, California, 1995). Online welcomes your questions (see page 12 for contact information).

USER GROUP TIP

Cancel a WinCIM Search

If you decide to cancel a search in the CompuServe Information Manager for Windows (WinCIM), click the **Modem** button to the right of the yellow question mark on the tool bar. The number above the word 'Cancel' on the Modem button lets you know the number of seconds WinCIM will wait before canceling the command if no data is received.

**Bob O'Connor
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HARDWARE Q & A

Best Upgrade for the Buck

Q Life was so much simpler before clock doublers and triplers came along. I need to upgrade, and I can't determine which would be the smarter move: increasing my 486-33 system to triple speed with a DX4 OverDrive chip, or upgrading my memory from 4MB to 16MB.

Chip Vernier, Oak Park, Michigan

A In my opinion, either of those choices may be overkill. In last November's cover story, "Upgrades: When They're Worth It, and When They're Not," our test system ran 43 percent faster with a \$200 DX2 OverDrive, and 54 percent faster with a \$450 DX4 OverDrive (these are estimated street prices). The 11-point difference, which emerged from our standard suite of application benchmarks, hardly seems worth the extra \$250. (Our tests were performed with a 486SX-25 system; you may get somewhat different results with your 486-33.)

As for memory, 8MB seems to be enough under most circumstances. Upgrading a 4MB system to 8MB should cost only about \$140—and in our tests

yielded a 12 percent performance boost with Windows applications (the tests didn't include multitasking, where you'd notice a bigger difference). If you use a professional desktop publishing program like QuarkXPress or a heavy-duty graphics application such as Adobe Photoshop—or if you juggle more than two or three full-fledged business applications at a time—then you might well justify the 16MB. But not in ordinary circumstances.

To make a long story short, you presented me with two options: a processor upgrade for \$450 or a memory upgrade for about \$420. I think you'll get a bigger boost with a DX2 OverDrive *and* an additional 4MB of RAM, for approximately \$340. Of course, by the time you read this, all these estimated prices may be lower.

Which Local Bus Is Which?

Q I'm attempting to perform a video upgrade on my 33-MHz 486DX computer. The manufacturer has gone out of business, and the manuals that came with the system describe only a local bus VGA system, with no mention of VL or PCI (the two local bus stan-

dards). Should I get a fast ISA video board or a local bus board?

Craig Bonvechio, Naples, Florida

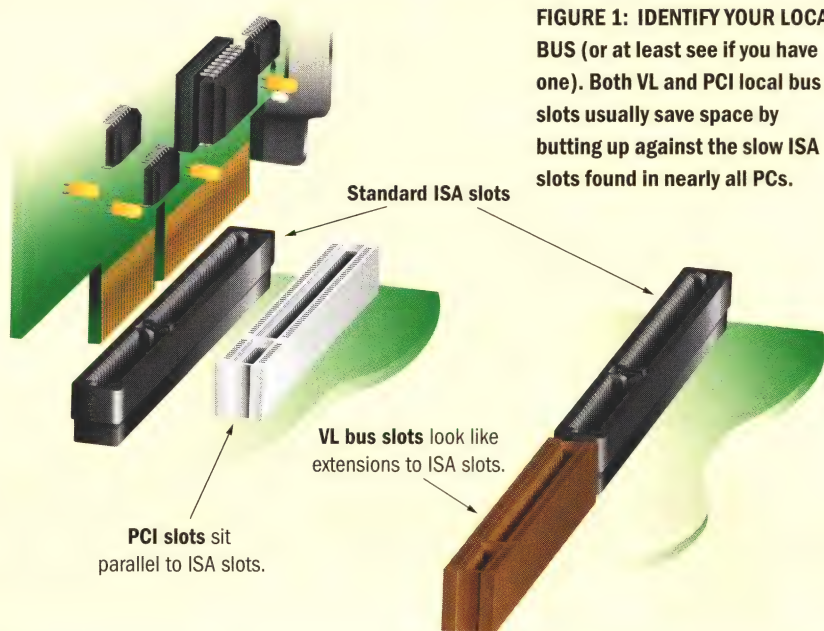
A To add a local bus video board, you need a standard local bus slot—either VL or PCI. It's easy to tell whether you have one of these; just open up your system and look for either of the two slots shown in **FIGURE 1**.

Because your manual doesn't mention the type of local bus, there's a good possibility you have the VL variety, which was the only type available for some time. Early VL bus systems had compatibility problems, so before you buy a VL bus video board, check with the video board's manufacturer to confirm that it will work in your machine. The company may or may not know for sure, so get a 30-day, unconditional money-back guarantee on any video board you purchase.

On the other hand, if you don't see any slots in your PC beyond the ordinary ISA variety, you may have a system with a proprietary local bus in which the video controller chip is integrated into the motherboard. In this situation, you need to buy an ISA video board. A new ISA board will almost certainly be faster than the old-fashioned local bus video circuitry built into your machine—at the least, it will produce higher-resolution images with less flicker. You'll have to disable the old integrated video controller; check your computer's manual to find out how to do this. Also, to enjoy the benefits of your new board, you need a monitor with the right specs (at a minimum, 1024 by 768 at 70 Hz).

Airport X-Rays Revisited

Q In last September's column, you were wrong when you stated that "airport X-ray machines won't harm your hardware or your data." The belt carrying items through the X-ray device is driven by an electric motor. That motor develops a magnetic field that can and does harm magnetic media—



including hard drives and floppy disks.

If you had limited your comments to X-rays per se, you would have been correct. My experience says that damage to disks is more prevalent in airports outside the United States, but it still can occur here.

R. N. Maddox, Stillwater, Oklahoma

A Well, I guess I have to eat crow on this one. You're right: Any large electric motor—in a drill, a blender, a golf cart—could scramble data on a disk. Still, you're the first person I've heard from who can confirm damage to data caused by an airport X-ray machine. Perhaps it's because you do enough international traveling to encounter conveyors (in Eastern Europe, maybe?) with hulking, unshielded, 220-volt motors near enough to the belt to do some damage. I'd love to hear from anyone else who is able to trace data loss to this phenomenon.

Supercheap PCs

Q I'm interested in the \$500 386SX you mentioned in your September column. There must be others like me who don't want to spend a lot on superpowered PCs they can't use effectively. Could you tell me the name of the manufacturer?

*Jack Patterson,
Winnipeg, Manitoba, Canada*

A By "superpowered PCs," I assume you mean 486 systems and up. The vendor of the 386SX PC I was referring to is Hi-Tech USA, located in the San Francisco Bay Area. (*PC World* has never tested any of the company's PCs, so this is definitely *not* an endorsement.)

I used Hi-Tech USA's system only as an example. The company is one of several vendors that advertise systems in this price range, that is, under \$500 for a 40-MHz 386SX system with 1MB of RAM, a 120MB hard disk, and a VGA monitor. However, the same company will sell you an identically configured 486SX-25 system—with similar performance but upgradable to a DX2-50—for only \$50 more. There goes your excuse for not buying a 486! I wouldn't be surprised if by the time you read this, you could buy a 386 system only secondhand.

When you pay a rock-bottom price for a system, don't expect top-of-the-line components or generous service and support. For example, although Hi-Tech USA offers a

one-year warranty on parts and labor and a 30-day return policy, the fine print of its advertisement notes that the company replaces or repairs defective items "at our discretion" and charges a 15 percent restocking fee for all returned items. When you buy from a company you're unfamiliar with, always try to get references from customers. Also, call its tech support line to see if you can really get through; if you can't, you probably won't be able to get help when

you need it. And as *Consumer Watch* reminds you consistently: Always, always pay by credit card when you shop by mail.

By Eric Knorr

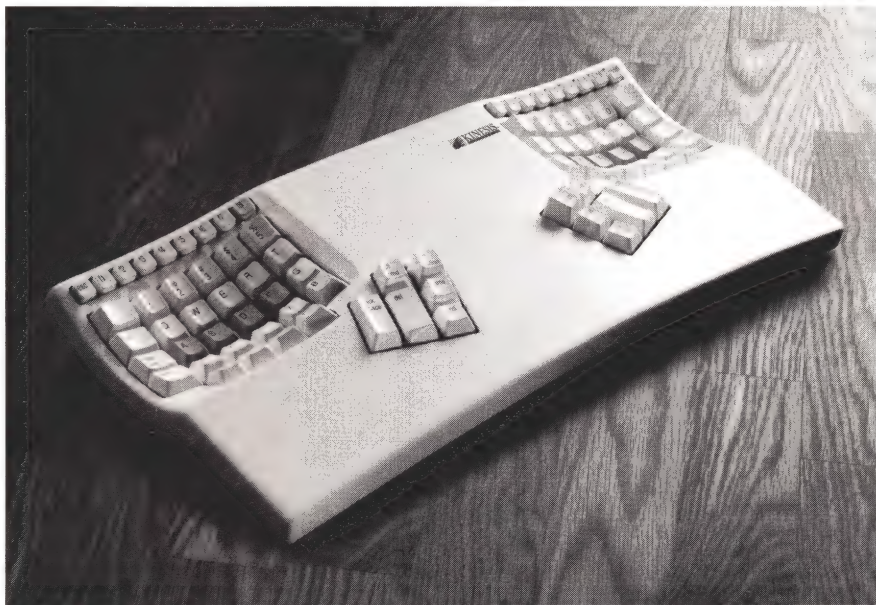
Eric Knorr is a contributing editor for PC World and the editor and principal author of The PC Bible (Peachpit Press, Berkeley, California, 1994). Hardware welcomes your questions (see page 12 for contact information).

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STAR-DOT-STAR TIPS

Switching Sounds

Tired of getting the same old sounds out of Windows every morning? Here's a QBASIC program, WINSOUND.BAS, that randomly changes the sounds your computer plays when you start or exit Windows. If you have DOS 5.0 or a later version, you've got QBASIC and can use this program.

First, create a directory called **C:\WAV** containing your collection of WAV files (but don't put anything in this directory you wouldn't want to hear on start-up or exit). Next, copy my program [FIGURE 1] to an ASCII text file called **WINSOUND.BAS** in the C:\WAV directory. Finally, add WINSOUND to Program Manager's Startup group: Select *File • New • Program Item*, type **C:\DOS\QBASIC.EXE /RUN C:\WAV\WINSOUND.BAS** into the Command Line field of the resulting dialog box, and type **C:\WAV** in the Working Directory field. This setup assumes that the QBASIC.EXE interpreter is installed in the C:\DOS directory. If it's not, be sure to change the beginning of the Command Line field text to reflect the correct path to QBASIC.EXE.

Jeff Kalikstein, address unknown

Editor's note: This utility can keep you on your toes—especially if you pick startling or unusual sounds for the WAV directory. If you'd rather not type the text of WINSOUND.BAS into a file, you can download it from PC World Online (see page 12 for more information). If Windows isn't installed on drive C:, or if you'd rather keep the directory of WAV files on a drive with more room to spare than C:, you may need to change a few of the path names in the listing as well as in the WINSOUND.BAS icon's Command Line field.

Also, WINSOUND.BAS relies on the format of listings produced by DOS's DIR command, so if you've heavily modified DIR's default output format using the DIRCMD environment variable, WINSOUND.BAS may not work.

If you're using DOS 6.2 or a later version, you may need to make a few other changes to run the program successfully.

```
DIM file$(999)
SHELL "DIR C:\WAV\*.WAV > C:\WAV\DIR.TMP"
OPEN "DIR.TMP" FOR INPUT AS #1
DO WHILE NOT EOF(1)
    LINE INPUT #1, temp$
    IF INSTR(temp$, " WAV") <> 0 THEN EXIT DO
LOOP
IF EOF(1) THEN GOTO TOOFEW
a = 1
DO
    file$(a) = LTRIMS(RTRIMS(LEFT$(temp$, 8))) + ".WAV"
    LINE INPUT #1, temp$
    a = a + 1
LOOP UNTIL LEFT$(temp$, 1) = " "
CLOSE #1
IF a <= 2 THEN GOTO TOOFEW
TRYAGAIN:
RANDOMIZE TIMER
systemstart = INT(RND * (a - 1)) + 1
systemexit = INT(RND * (a - 1)) + 1
IF systemstart = systemexit THEN GOTO TRYAGAIN
OPEN "C:\WINDOWS\WIN.INI" FOR INPUT AS #1
OPEN "temp.$$$" FOR OUTPUT AS #2
DO WHILE NOT EOF(1)
    LINE INPUT #1, temp$
    IF INSTR(temp$, "SystemExit=") <> 0 THEN EXIT DO
    IF INSTR(temp$, "SystemStart=") <> 0 THEN EXIT DO
    PRINT #2, temp$
LOOP
PRINT #2, "SystemExit=C:\WAV\"; file$(systemexit);
PRINT #2, ",Windows Start"
PRINT #2, "SystemStart=C:\WAV\"; file$(systemstart);
PRINT #2, ",Windows Exit"
DO WHILE NOT EOF(1)
    LINE INPUT #1, temp$
    IF INSTR(temp$, "SystemExit=") <> 0 THEN GOTO SKIP
    IF INSTR(temp$, "SystemStart=") <> 0 THEN GOTO SKIP
    PRINT #2, temp$
SKIP:
LOOP
CLOSE #1, #2
SHELL "COPY TEMP.$$$ C:\WINDOWS\WIN.INI"
KILL "TEMP.$$$"
TOOFEW:
KILL "DIR.TMP"
SYSTEM
```

FIGURE 1: HEAR NEW SOUNDS when starting or leaving Windows by launching WINSOUND.BAS from your Program Manager's Startup group; this QBASIC program shuffles start-up and exit WAV files randomly.

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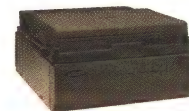
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486SX/25	Mono	120MB	\$900
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486DX/33	Color/Active Matrix	200MB	\$1,899*
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By default, DOS 6.2's COPY command prompts you to confirm the operation if you try to copy one file over another. If you haven't already done so, you'll need to disable the confirmation prompt so that the batch file will run without interruption. You can do this in one of two ways: (1) Add /Y to the COPY command in the fifth line from the bottom of the listing (after making the change, the line should read **SHELL "COPY /Y TEMP.\$\$\$ C:\WINDOWS\WIN.INI"**); or (2) Add the command **SET COPYCMD=/Y** to your AUTOEXEC.BAT file. The latter technique turns off the prompt every time you use COPY, so use it with care.

Smart Savings

Almost every savvy spreadsheet user knows about the PMT, or payment, function found in all spreadsheets since Visicalc. This handy tool calculates the monthly amount you must pay on a fully amortized loan with a given loan amount, interest rate, and term. But few people know that you can also use it to plan your savings. Suppose you want to figure out how much you must invest each month to have a specific amount in your mutual fund account at the end of a given period. Use the formula **=PMT(target,rate,-period)**, where *target* is the monetary goal (your spreadsheet's documentation may call this argument

pv or present value), *rate* is the interest rate per period (for monthly contributions, this is the yearly interest rate divided by 12), and *period* is the total number of monthly payments (an argument often called *nper* in spreadsheet documentation).

Let's say you have a mutual fund that returns 6 percent a year (0.005 per month), and you would like to have \$20,000 in the account after five years. How much must you put in each month? The equation **=PMT(20000, 0.005,-60)** yields \$286.66. To prove that this number is correct, use the FV (future value) function: **@FV(286.66, 0.005,60)** yields \$20,000.

Jean-Maurice Fortier,

Ile-des-Soeurs, Quebec, Canada

Editor's note: This technique is a great way to plan your savings. Since interest rates and mutual fund returns fluctuate, however, you may need to revise the calculation over time, subtracting the amount you've already saved from the goal, and the number of months that have passed. Also, while Fortier's examples work fine in 1-2-3 and Quattro Pro, Excel's PMT function orders its arguments differently: **=PMT(rate,period,target)**. Thus, the sample equation would appear this way in Excel: **=PMT(0.005,-60,20000)**. Excel's future value function is likewise slightly

rearranged; to check the sample PMT calculation in Excel, you would use this future value equation: **=FV(0.005,60,-286.66)**.

Where Oh Where Are My ATM Fonts?

I recently installed Adobe Type Manager on a friend's system. However, when he restarted Windows and tried to use the new fonts in Ami Pro, all he saw were the TrueType fonts that were there before we installed ATM. The problem was not with ATM, the word processor, or any other application. Instead, my friend needed to change a poorly documented setting in the Control Panel's Fonts applet.

If you've encountered a similar problem, the solution is simple. Just uncheck the *Show Only TrueType Fonts in Applications* box, click OK, and close the Fonts applet. The ATM fonts should appear in the fonts list in your applications.

Sandeep V. Tamhankar,
Ithaca, New York

Rulers Are for Measuring

While using Word 6.0 for Windows, I discovered a nifty feature I've never seen mentioned in a help column or tips article. When you hold down <Alt> and then click anywhere on the ruler at the top of the document window, the normal ruler markings are replaced by a tape measure-like display that gives you a readout of the size of various indents, hanging indents, and margins [see FIGURE 2]. If you know that you want to indent a page or paragraph a particular number of inches, holding down <Alt> while you drag ruler markers beats trying to figure out how many little notches equals 1.25 inches, and this technique saves you the trouble of opening the File•Page Setup or Format•Paragraph dialog boxes to type in the margin sizes.

Darian Kindlund, Winter Park, Florida
By Brett Glass

Brett Glass is a contributing editor for PC World. Star-Dot-Star welcomes your tips, macros, batch files, and short programs (see page 12 for contact information).

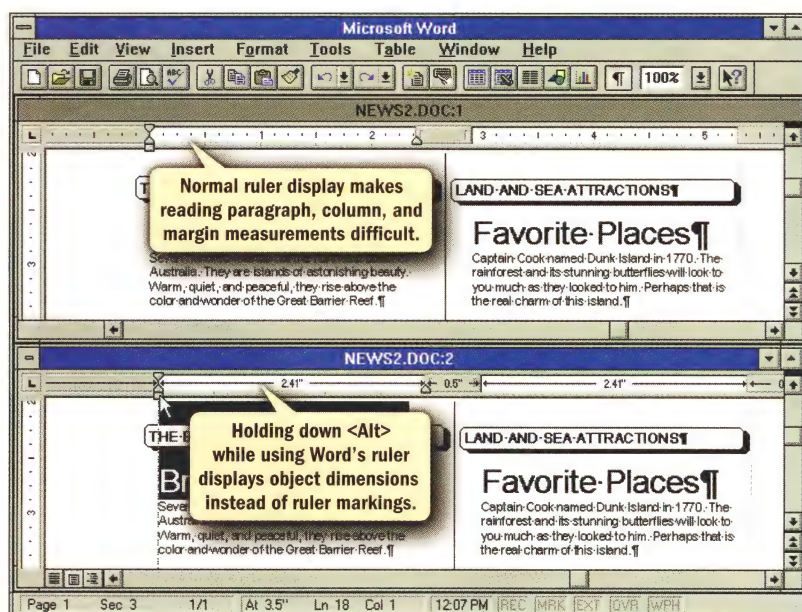


FIGURE 2: SEE PAGE AND PARAGRAPH MEASUREMENTS PLAINLY in Word 6.0 for Windows by holding down <Alt> before adjusting margins or tabs on the ruler.

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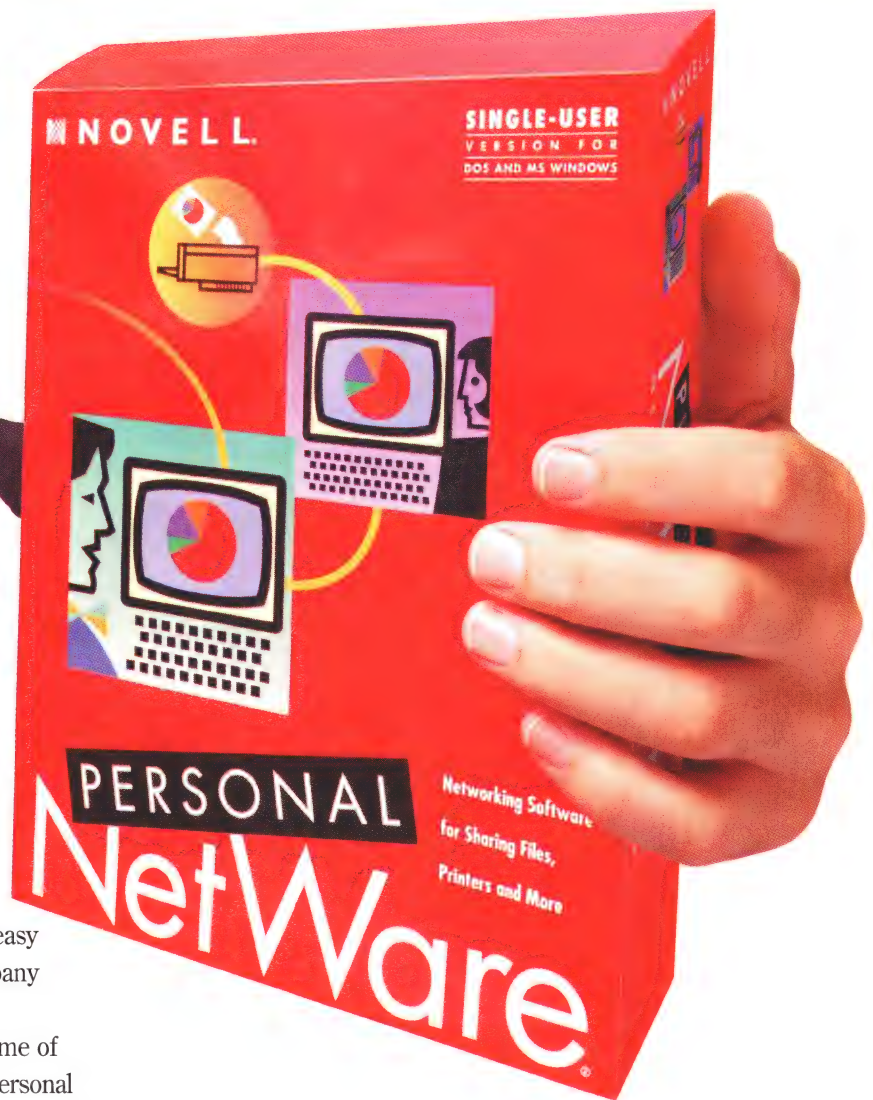
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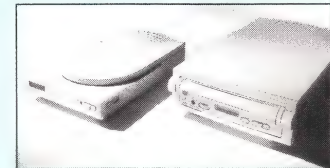
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MultiSpin 2V Deluxe: sound card speakers, five CD titles.....\$299
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MEMORY FOR IBM & APPLE	SONS	70NS	SONS	100NS
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256x16 (2P)	24.00	22.00	21.00	-
256x16 (2P)	7.25	6.75	5.00	5.95
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256x16 (2P)	29.00	12.50	11.95	9.95
256x16 (2P)	-	3.25	2.95	2.25
64K	-	-	-	3.75
64K	-	-	-	2.00
256x16 (2P)	-	39.00	-	-
256x16 (2P)	-	49.00	38.00	-

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SONS	70NS	SONS	100NS
8087	-	-	-
8087-2	39.00	-	-
8087-1	79.00	-	-
8087-XL	49.00	-	-
8087-16 DX	49.00	-	-
8087-20 DX	49.00	-	-
8087-DX (Does All)	24.00	-	-
80487-SX (Does All)	69.00	-	-
Intel SX (Does All)	69.00	-	-
Intel SX, Mobil	39.00	-	-
Intel 16SX	39.00	-	-
Intel 20SX	49.00	-	-

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	4/8/16 Meg	175/00/339/059.00
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Ambr N 425SL	4/8/12/16 Meg	189.00/349/059/067.00
Ambr N Series	4/16 Meg	189.00/349/059/067.00
Ambr N Series	2/8 Meg	89.00/138.00
Ambr N Series	4/16 Meg	209.00/399/065.00

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1Meg x 9 (3 chip)	-	45.00	-	-	-	-
1Meg x 9 (3 chip)	-	45.00	45.00	45.00	45.00	39.00
1Meg x 9	-	162.00	156.00	145.00	-	-
16Meg x 9 (9 chip)	-	-	660.00	-	-	-

* Single chip upgrade solution
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* Uses industry standard math chip
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4Meg/8Meg/16Meg	-	-

SIMM MODULES (Add \$5.00 for SIPP)

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1Meg x 9 (3 chip)	-	45.00	-	-	-	-
1Meg x 9 (3 chip)	-	45.00	45.00	45.00	45.00	39.00
1Meg x 9	-	162.00	156.00	145.00	-	-
16Meg x 9 (9 chip)	-	-	660.00	-	-	-

72 PIN SIMMS (EISA)

	40NS	50NS	60NS	70NS	80NS	100NS
256 x 36 1 mg	-	-	-	-	59.00	-
512 x 36 2 mg	-	-	-	96.00	94.00	-
1 mg x 36 4 mg	-	154.00	174.00	-	-	-
2 x 36 8 mg	-	359.00	339.00	339.00	-	-
4 x 36 16 mg	-	609.00	579.00	599.00	-	-
8 x 36 32 mg	-	1239.00	1229.00	-	-	-
16 x 36 64 mg	-	2699.00	2599.00	-	-	-
1 x 32 4 mg	-	164.00	159.00	-	-	-
2 x 32 8 mg	-	319.00	309.00	-	-	-
4 x 32 16 mg	-	567.00	567.00	-	-	-

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AST MEMORY

MODEL	AMT. UPGRADED	AST PART #	PRICE
Bravo LC 4/25S, 4/33, 4/33S, 4/50S, 4/66S	4Meg	500897-002	174.00
	8Meg	500897-003	330.00
	16Meg	500897-004	619.00
	32Meg	500897-005	1399.00
Premium 486/25, 25E, 33, 33E	4Meg	500780-001	398.00
Premium 386/33, 486/25T, 33T	4Meg	500780-004	189.00
Prem. II 386/25, 33, 386/33, 486/33, 486SX/20	8Meg	501159-002	379.00
Premium 386/33, Prem. 386SX/16	16Meg	501159-003	789.00
Premia 4/33S, 4/33, 4/50, 4/66	32Meg	501159-005	1469.00
Premia 64Meg	64Meg	500818-001	3111.00
AST Cupid Bd	0-32Meg	-	179.00

ZENITH MEMORY MODULES

MODEL	AMT. UPGRADED	AST PART #	PRICE
Z386/33, 25, 20, 33E	1Meg	ZA3800ME	59.00
Z386/33, 25, 20, 33E, 486/25E	4Meg	ZA3800MK	180.00
Z386SX	2Meg	Z-805-1 modules	119.00

MAGNAVOX

	1MEG - 59.00	4MEG - 180.00	8MEG - 349.00	16MEG - 659.00
286/386SX-16, 386SX-20, 486SX-20 & 386-33 all are 72PIN SIMM.	-	-	-	-

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IBM P/52 32BIT EXPANSION BD.

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0Meg	2Meg	4Meg	8Meg	16Meg
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IBM PART NO.	WORKS WITH MODEL NO.	PRICE
30F3348 (512K)	30-286	37.00
30F3350 (2Meg)	30-286, 25-286, 50 MTHR BD.	104.00
6450375 (1Meg)	80-111, 311-121, 321, 081, 161	79.00
6450379 (2Meg)	80-121, A-61, 8-21, B-1, 35X, 35L, 40SX, VLP P, 32ST	84.00
6450604/9267196 (2Meg)	U061 E91, 102, 502, 55SX, 65SX, P-70	99.00
6450608 (2Meg)	55LX, 65LX, X-Station 120 & 130, 35SX, 35L, 40SX	90.00
78X955 (128K)	25	35.00
34F2933 (4Meg)	35SX, 40SX, 55SX, 65SX, 55L, 65L	175.00
8798777/8792199 (4Meg)	PS/1 & PS/1 386SX, Model 2121	89.00
92F955 (512K)	PS/1 Expert, Consultant, Willow	109.00
92F956 (4Meg)	Value Point Performance, PC Server 466	339.00
92G7200 (4Meg)	Value Point Performance, PC Server 466	175.00
92G7201, 7363131 (4Meg)	Value Point Performance, PC Server 466	339.00
7363132/9267204 (8Meg)	Value Point Performance, PC Server 466	609.00
92G7205 (32Meg)	Value Point Performance, PC Server 466	1239.00
6450609 (2Meg)	Value Point 57, 57SX, 90, 95, P-75, 57SLC	80.00
6450128/9267200 (4Meg)	57SX, 90, 95, P-75, 57SLC, 56, 56SLC, PS/1, 386SX	175.00
6450129/9267428 (8Meg)	Mod 2121, 233, 255, VLP P, 77, 486SX, 486SX, SVR85	339.00
6450130/9267428 (8Meg)	35SX, 40SX	339.00
6451159 (4Meg ecc)	56, 57, 57SX, 90, 95, P-75, 57SLC	199.00
6451159 (8Meg ecc)	486, 50SX, 56A (install in pairs)	399.00
	486, 50SX, 56A (install in pairs)	749.00

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819098 (4Meg)	Thinkpad 500, 510C (3.3 volt)	209.00
819099 (8Meg)	Thinkpad 500, 510C (3.3 volt)	389.00
819113 (16Meg)	Thinkpad 510C (3.3 volt)	889.00
79F089 (2Meg)	LX40, NX33X, PS Note	1345.00
79F1001 (8Meg)	LX40, NX33X, PS Note, Tpod 350, 350c, PS Note 425	369.00
0761415 (4Meg)	LX40, NX33X, PS Note	209.00
0761416 (8Meg)	Thinkpad 750, 755, 360, 355, 340, 450	389.00
6660094 (16Meg)	Thinkpad 750, 755, 360, 355, 340, 450	849.00
0761420 (4Meg)	Thinkpad 750, 755, 360, 355, 340, 450	209.00
0761421 (8Meg)	Thinkpad 750, 755, 360, 355, 340, 450	319.00
6603078 (8Meg)	CL57LX Ltp, Thinkpad 700, 700C, 720C	319.00
6603079 (16Meg)	CL57LX Ltp, Thinkpad 700, 700C, 720C	609.00
92F8804 (2Meg)	Thinkpad 350, 350c, PS Note 425	109.00
	Thinkpad 350, 350c, PS Note 425	109.00

COMPAG MEMORY MODULES

MODEL	AMT. UPGRADED	COMP PART #	PRICE
DeskPro 386/33, 386/33L	2Meg Module	11514-011	109.00
486/25, 486/33	8Meg Module	11565-011	399.00
486/50, System Pro	32Meg Module	11565-011	109.00
DeskPro 386/33, 486/33L	(Ecc Bd)	11565-011	279.00
DeskPro 386/25, 386/20	1Meg Module	11313-011	79.00
DeskPro 386/16MHz	1Meg Exp Bd	11363-011	149.00
	1Meg Exp Bd	11364-011	279.00
	1Meg Module	11364-011	149.00
DeskPro 386/20E	1Meg Module	11364-011	149.00
DeskPro 386/25E	1Meg Module	11364-011	149.00
DeskPro 286/33	1Meg Module	11313-011	79.00
DeskPro 286/33L, 386SX/20, all "M" series, system LI series, all "T" series	1Meg Kit	11313-011	199.00
	4Meg Kit	11313-011	389.00
	1-4Meg Exp Bd	11313-011	199.00
DeskPro 286	512K Kit	11313-011	437.00
DeskPro 5/90, 5/66M, 5/66M	8Meg Kit	14991-011	699.00
Prosignia 5/60	8Meg Kit	14991-011	699.00
Prosignia 100/50	2Meg Kit	14991-011	139.00
Prosignia 2000/43, 5/66	2Meg Kit	14991-011	2516.00
Prosignia 4000/45, 5/66	4Meg Kit	14991-011	499.00
Prosignia 386/33S, 3/25S	2Meg	14172-011	316.00
Prosignia 486/42S, 4/33, 4/50, 4/66, CDS	2Meg	14183-011	95.00
Enhanced Prosignia, Prosignia series	8Meg	14185-011	339.00
Prosignia PC Server, 486/33, 486/25/66	8Meg	14185-011	339.00
	16Meg	14185-011	699.00
	32Meg	14185-011	1199.00

COMPAQ LAPTOPS & NOTEBOOKS			
LITE286	4Meg Bd	117081-003	179.00
LITE386/20	4Meg Module	121125-002	209.00
LITE LITE20, 25, 25C	4Meg Module	121769-002	209.00
LITE LITE20, 25, 25C	3Meg Module	121769-003	409.00
LITE LITE20, 25, 25C	16Meg Module	121769-004	809.00
LITE LITE425/33/25E/25L	4Meg Module	142337-002	189.00
LITE LITE425/33/25E/25L	8Meg Module	142337-003	389.00
LITE LITE425/33/25E/25L	16Meg Module	142337-004	718.00
SLT286	4Meg Module	110237-001	199.00
SLT386	2Meg Module	11834-001	199.00
SLT386	4Meg Module	11835-001	219.00
Concerto, LITE Elite	4Meg	144790-001	199.00
	8Meg	144790-002	389.00
	16Meg	144790-003	719.00
Concerto 320, 325	2Meg	139497-001	99.00
	4Meg	139498-001	189.00
	8Meg	139499-001	339.00
Concerto 400	4Meg/8Meg/16Meg	209/389/719	
Concerto 4/25, 4/25C, 4/25CX	4Meg	146520-001	189.00
	8Meg	146521-001	339.00
	16Meg	146531-001	699.00
Aero 4/25, 4/33L	4Meg	190532-001	184.00
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MODEL	AMT. UPGRADED	MANU. PART #	PRICE
T1000SX/LE	2Meg	PC14-PAB312U	89.00
T2000/2000SX	2Meg	PC14-PAB317U	89.00
T2000SX/LE	4Meg	PC-PAB314U	189.00
T2000SX/LE	4Meg	PC14-PAB315U	359.00
T2000SX/LE	4Meg	PC-PAB316U	189.00
T2000SX/LE	4Meg	PC-PAB317U	189.00
T2000SX/LE	4Meg	PC-PAB318U	189.00
T2000SX/LE	4Meg	PC-PAB319U	189.00
T2000SX/LE	4Meg	PC-PAB320U	189.00
T2000SX/LE	4Meg	PC-PAB321U	189.00
T2000SX/LE	4Meg	PC-PAB322U	189.00
T2000SX/LE	4Meg	PC-PAB323U	189.00
T2000SX/LE	4Meg	PC-PAB324U	189.00
T2000SX/LE	4Meg	PC-PAB325U	189.00
T2000SX/LE	4Meg	PC-PAB326U	189.00
T2000SX/LE	4Meg	PC-PAB327U	189.00
T2000SX/LE	4Meg	PC-PAB328U	189.00
T2000SX/LE	4Meg	PC-PAB329U	189.00
T2000SX/LE	4Meg	PC-PAB330U	189.00
T2000SX/LE	4Meg	PC-PAB331U	189.00
T2000SX/LE	4Meg	PC-PAB332U	189.00
T2000SX/LE	4Meg	PC-PAB333U	189.00
T2000SX/LE	4Meg	PC-PAB334U	189.00
T2000SX/LE	4Meg	PC-PAB335U	189.00
T2000SX/LE	4Meg	PC-PAB336U	189.00
T2000SX/LE	4Meg	PC-PAB337U	189.00
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T2000SX/LE	4Meg	PC-PAB340U	189.00
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T2000SX/LE	4Meg	PC-PAB342U	189.00
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T2000SX/LE	4Meg	PC-PAB344U	189.00
T2000SX/LE	4Meg	PC-PAB345U	189.00
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T2000SX/LE	4Meg	PC-PAB352U	189.00
T2000SX/LE	4Meg	PC-PAB353U	189.00
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T2000SX/LE	4Meg	PC-PAB355U	189.00
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T2000SX/LE	4Meg	PC-PAB360U	189.00
T2000SX/LE	4Meg	PC-PAB361U	189.00
T2000SX/LE	4Meg	PC-PAB362U	189.00
T2000SX/LE	4Meg	PC-PAB363U	189.00
T2000SX/LE	4Meg	PC-PAB364U	189.00
T2000SX/LE	4Meg	PC-PAB365U	189.00
T2000SX/LE	4Meg	PC-PAB366U	189.00
T2000SX/LE	4Meg	PC-PAB367U	189.00
T2000SX/LE	4Meg	PC-PAB368U	189.00
T2000SX/LE	4Meg	PC-PAB369U	189.00
T2000SX/LE	4Meg	PC-PAB370U	189.00
T2000SX/LE	4Meg	PC-PAB371U	189.00
T2000SX/LE	4Meg	PC-PAB372U	189.00
T2000SX/LE	4Meg	PC-PAB373U	189.00
T2000SX/LE	4Meg	PC-PAB374U	189.00
T2000SX/LE	4Meg	PC-PAB375U	189.00
T2000SX/LE	4Meg	PC-PAB376U	189.00
T2000SX/LE	4Meg	PC-PAB377U	189.00
T2000SX/LE	4Meg	PC-PAB378U	189.00
T2000SX/LE	4Meg	PC-PAB379U	189.00
T2000SX/LE	4Meg	PC-PAB380U	189.00
T2000SX/LE	4Meg	PC-PAB381U	189.00
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T2000SX/LE	4Meg	PC-PAB384U	189.00
T2000SX/LE	4Meg	PC-PAB385U	189.00
T2000SX/LE	4Meg	PC-PAB386U	189.00
T2000SX/LE	4Meg	PC-PAB387U	189.00
T2000SX/LE	4Meg	PC-PAB388U	189.00
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T2000SX/LE	4Meg	PC-PAB394U	189.00
T2000SX/LE	4Meg	PC-PAB395U	189.00
T2000SX/LE	4Meg	PC-PAB396U	189.00
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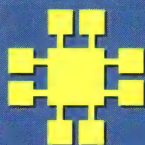
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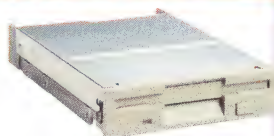
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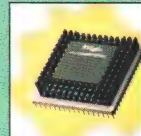


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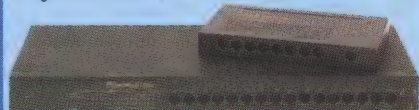
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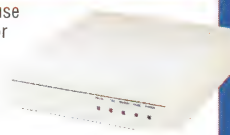


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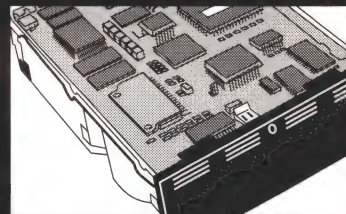
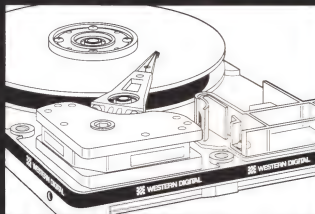
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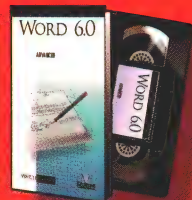
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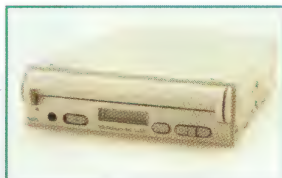


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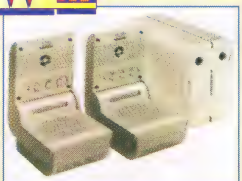
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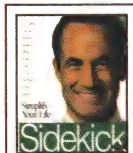
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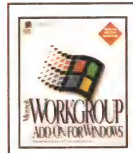
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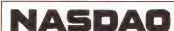
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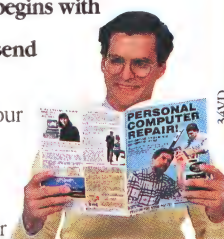
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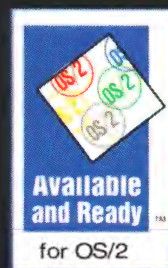
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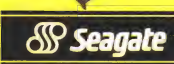
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ST48900	18900MB	10MS	IDE	550
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ST65400	35400MB	10MS	IDE	880
ST65900	35900MB	10MS	IDE	890
ST66400	36400MB	10MS	IDE	900
ST66900	36900MB	10MS	IDE	910
ST67400	37400MB	10MS	IDE	920
ST67900	37900MB	10MS	IDE	930
ST68400	38400MB	10MS	IDE	940
ST68900	38900MB	10MS	IDE	950
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ST19500	5.6GB	8MS	SCSI-2	1195
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ST21500	6.6GB	8MS	SCSI-2	1195
ST22500	7.1GB	8MS	SCSI-2	1195
ST23500	7.6GB	8MS	SCSI-2	1195
ST24500	8.1GB	8MS	SCSI-2	1195
ST25500	8.6GB	8MS	SCSI-2	1195
ST26500	9.1GB	8MS	SCSI-2	1195
ST27500	9.6GB	8MS	SCSI-2	1195
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ST29500	10.6GB	8MS	SCSI-2	1195
ST30500	11.1GB	8MS	SCSI-2	1195
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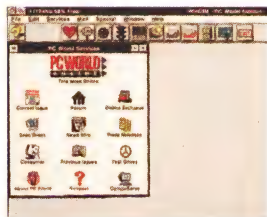
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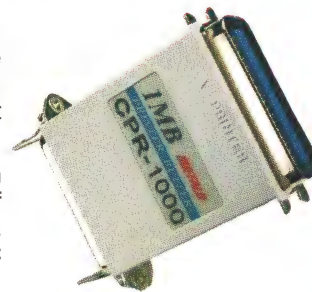
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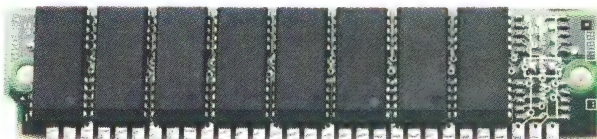
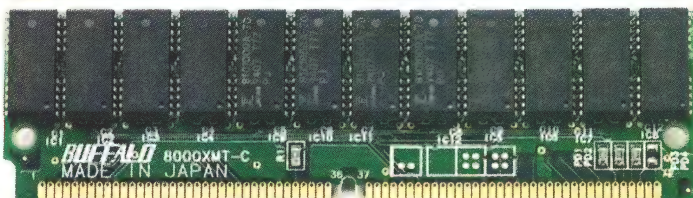
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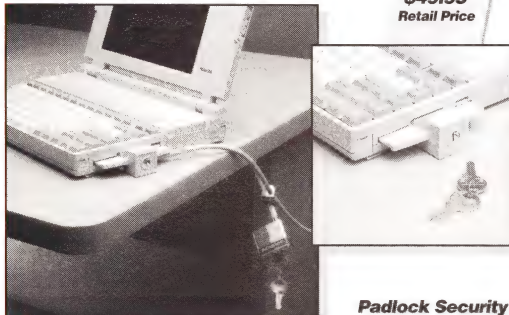
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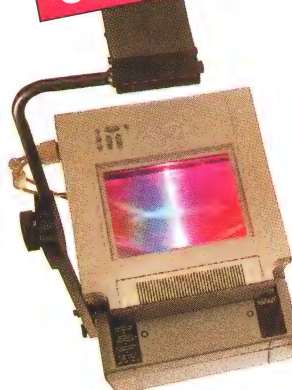
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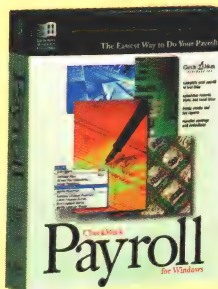
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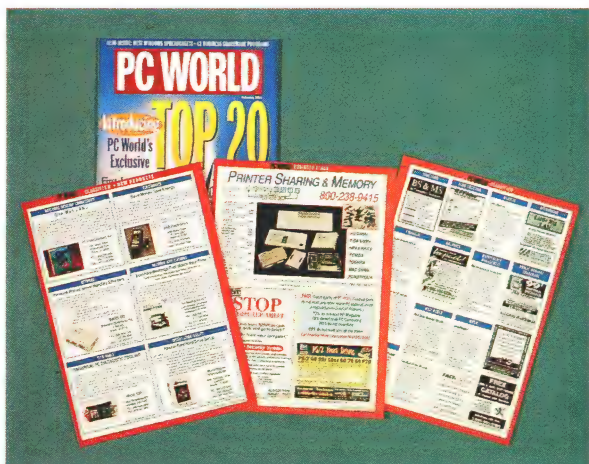
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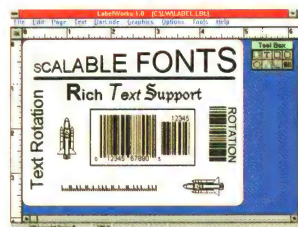
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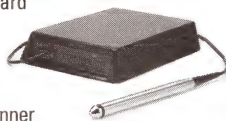
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Superheroes of Hoboken, Up the Nile, and Enough About Warplanes

Bored with battling sword-wielding goblins and spell-casting wizards? Then try your hand against lawyers who slay you with huge bills, Supermoms who set you up with horrible dates, and bureaucrats who bore you to death by trapping you in slow-moving lines. All this, plus the wildest set of superheroes since Monty Python met the Holy Grail, is built into Superhero League of Hoboken, the latest comedy-adventure from gaming auteur Steve Meretzky.

If you were a fan of his brilliant Leather Goddesses of Phobos, or Spell-casting 101: Sorcerers Get All the Girls, you ought to be on your way to the store by now—because Hoboken is the best Meretzky yet.

It's also a spoof of all those adventure games where "there is a room to the north; stairs lead up and down...." Meretzky cheerfully subverts the form by reinventing it in parody. For instance, you find yourself leading a troupe of superheroes that includes the Iron Tummy, whose only known superpower is his ability to eat spicy food without distress, and Tropical Oil Man, whose primary offensive technique is to increase his foe's cholesterol level. And instead of hacking you to bits with a broadsword, the villains in Hoboken are perfectly capable of doing you in by enrolling you in an encounter group—which will kill you as dead as a broadsword would. Maybe deader.

Unfortunately, installing Hoboken was an all-too-familiar multimedia disaster; the game kept crashing, so after I tried every IRQ and DMA setting in the book I simply disabled the digital sound effects altogether. The game ran fine, the music still played, and I never missed the sound effects.

The excellent interface is mouse-driven, for the most part. It also features amusing graphics along with the ever



present (and ever silly) text blocks—without which no adventure game can truly be complete.

Archibald of Egypt

Archibald's Guide to the Mysteries of Ancient Egypt is aimed at kids, but as a multimedia intro to the history and culture of Egypt, it's fine for anyone who's curious about mummies, hieroglyphics, or the Nile. The presentation is fairly basic: picture-book images with simple animation, plus a voice-over from Archibald, a kid whose dialogue tends toward Britishy phrases like, "Jolly good! Off we go, then!"

I ran into a few technical problems, such as a sound track that stuttered as it tried to synchronize with on-screen text, but for the most part this Windows-based CD-ROM is a solid educational package. You can even learn to read and write hieroglyphics.

Let Slip the Birds of War

Anyone addicted to Tom Clancy's novels (which are little more than fictionalized catalogs of state-of-the-art military hardware) will go totally ape for Warplanes—Modern Fighting Aircraft.

This Windows-based CD-ROM is a definitive encyclopedia of military aircraft and their weapons systems, and it

also includes minidocumentaries on spy planes, the Arab-Israeli conflict, and the Gulf War.

Unlike many multimedia packages that are long on audiovisual smoke and mirrors and short on useful substance, Warplanes is packed with rich information. It covers more than 500 fighting aircraft and nearly 300 weapons systems in loving, almost obsessive detail. What's the top speed of the F-15? Why is the latest Taiwanese fighter jet *not* getting the engine upgrade that was promised? Does the Sea Harrier carry its air-to-air missiles inboard or outboard under the wing? This is where to find out.

Every warbird features one or more in-flight photos, weapons systems diagrams, and in many cases, video clips of the planes in action—plus detailed listings of armaments, electronics, performance specs, and fuel capacity. You can explore world military maps, airfield sound effects, and 3-D aircraft models. Or you can take the controls of three flight simulators, which come complete with animated sequences demonstrating the latest "air superiority" tactics.

Warplanes will probably tell most

In Superhero League of Hoboken, Steroid Man is one of the heroes—imagine what the villains are like.

By Michael Goodwin



WARPLANES—MODERN FIGHTING AIRCRAFT can tell you just what you want to know about the Sea Harrier—and more.

people more than they want to know about modern fighting aircraft. But for hobbyists, military history buffs, and flight simulator fans, it's the next best thing to a Wild Weasel in the backyard.

Cowgirl Pool Shooters

Eight Ball Deluxe is the best computer pinball game I've ever played. Flipper re-

liard balls, to the unique third flipper halfway up the left side, this is one of the classic tables. It's a lot easier to lose your ricocheting ball on this one, but that's the kind of hazard that hooks pinball wizards. If I had a single complaint, it would be that the sound effects are a bit electronic.

Noises aside, Eight Ball Deluxe is every bit as fun as the real thing—with the possi-

sponse is hair-trigger, the bumpers and rollover slots are realistic, and you can shove the table with an authentic three-way nudge.

Best of all, this isn't just any pinball game; it's a game based on one of Bally's most challenging and popular machines—the one that boosted the company from third place to the top of the pinball heap in the early 1970s.

From its country-western visuals with cowgirl pool shooters and flashing bil-

ble exception of not being able to set your drink on the glass. But then, you don't have to worry about quarters or some big guy waiting for a game. This is the first release in Amtex's Collector Series of classic pinball machine simulations; I hope they're working on Fireball 500 and King of Diamonds.

• Archibald's Guide to the Mysteries of

Ancient Egypt \$39.95; Swfte Int'l; 800/237-9383, 302/234-1740

Reader service no. 807

• **Eight Ball Deluxe** \$49.95; Amtex; 613/967-7900,

Reader service no. 808

• **Superhero League of Hoboken** \$59.95; Legend Entertainment; 800/658-8891, 703/222-8500

Reader service no. 809

• **Warplanes—Modern Fighting Aircraft** \$69; Maris Multimedia/Maxis; 800/336-0185, 415/492-2819

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Michael Goodwin is a contributing editor for PC World. He can be reached on PC World Online (see page 12 for contact information). ■

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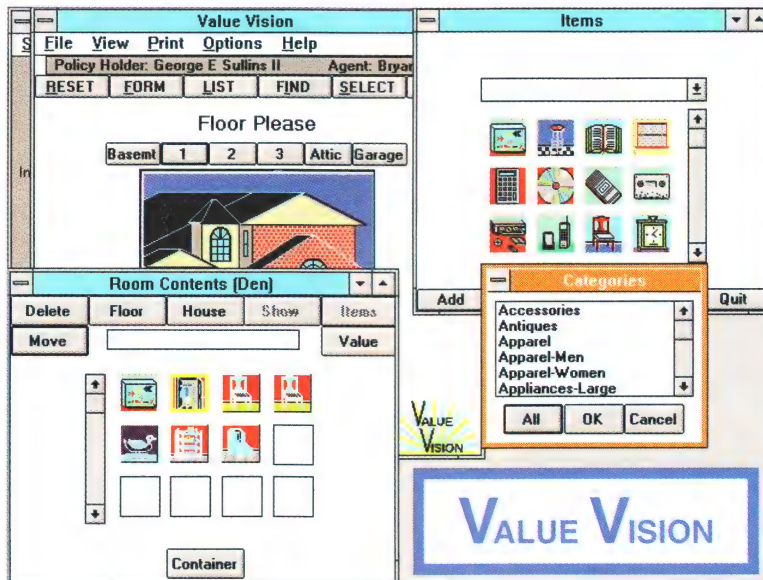


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P502

Getting Zapped (and What to Do About It)

Murphy must have built my computer: A deadline approaches and down it goes. Along with the important stuff—like playing *Myst*—I use my system to manage my business, maintain my user group's database, and write this column. So I do everything I can to guard against catastrophe. And when my computer starts acting up, I've got a couple tricks up my sleeve to get it up and running.

See, a lot of stuff can incapacitate your system. For one thing, some errant installation program can jumble your hard disk's boot record. Or a bad battery can take out your CMOS information. And a power surge can zap just about any part of your computer it wants to, although the CMOS is the likely target. The CMOS chip holds vital information about your hard disk, memory, display, and floppy drive. Without this crucial data, your computer is as confused as a cat on moving day.

Just Dial 911

So you've *got* to have a rescue disk—a bootable floppy with the files you need to get your computer going again. I rely on PC911, a spectacular program that keeps my rescue disk up to date; and it's dirt cheap, too—about \$25 on the street. PC911 creates an emergency boot disk and loads it with every conceivable bit of info about my computer, including hard disk partition data and, of course, my CMOS information.

Each time I boot up, PC911 takes a couple seconds to check out my system, look for changes, and if need be warn me to update my emergency disk.

There's more: PC911 keeps a history of changes in my main configuration files, giving me a chance to describe each change, compare versions and—get this—restore an unlimited number of previous versions. It also copies DOS

6.x's FORMAT, UNDELETE, UNFORMAT, and EDIT, plus AUTO-EXEC.BAT and CONFIG.SYS, to the floppy. When stuff happens, all this information can be a lifesaver.

PC911 also tracks interrupts and DMA channels. To help deal with conflicts, the program lists all my add-in cards, plus their interrupts. This is one great utility that belongs on your disk. And it doesn't hang out in RAM, taking up room and looking for things it can conflict with.

But isn't it better to *prevent* a problem in the first place? Well, you can make your world a whole lot safer with a good surge suppressor. Everyone seems to make them nowadays, but be careful what you buy. Surge suppressors (also called surge protectors) are rated in an obscure language spoken only by electricians. Get something with at least 240 joules (never mind what it means—the higher the number, the better) and a let-through factor (how much electricity gets through; lower is better here) of less than 50 volts. If the unit doesn't show its ratings, don't buy it. Surge suppressors are cheap—about \$40 discounted for a perfectly good one. Maybe I worry too much, but I've even got them for my TV and stereo.

A Battery Under Your Desk

Because my home is near the mountains and has frequent power outages, I use something stronger than just a suppressor: an uninterruptible power supply. I plug my computer and monitor into the UPS, and if the power goes out, my system keeps on ticking. While the rest of the house is in darkness, I've got about 10 minutes to get safely to shore. That isn't enough time to write the great American novel, but it does let me finish what I'm doing, save all my open applications, close down Windows, and



do an incremental backup before my computer starts hibernating.

My wife's computer, a 386 with a 14-inch monitor and a 250MB hard disk, is pretty standard, so she can get away with a really cheap UPS—APC's Back-UPS 280 with 280 watts, which sells for about \$115 discounted. My system is heftier, with a 17-inch monitor, a 1.7GB hard disk, and a tape backup drive. So I use APC's Smart-UPS v/s 420, rated at 420 watts and discounted to about \$300. What's more, APC offers a lifetime equipment protection policy that covers your equipment for up to \$25,000 for any part of your system that's damaged through a fault of the UPS.

When my deadline approaches, I need to know I can depend on my computer. My editor hates it when I turn in a manuscript in pencil.

- **PC911** \$29.95; CyberMedia; 800/529-2373, 310/843-0800
Reader service no. 760
- **Smart-UPS** \$349; Back-UPS 280 \$139; American Power Conversion; 800/800-4272, 401/789-5735
Reader service no. 761

Contributing Editor Steve Bass is president of the Pasadena IBM Users Group. He can be reached on PC World Online (see page 12 for more information).

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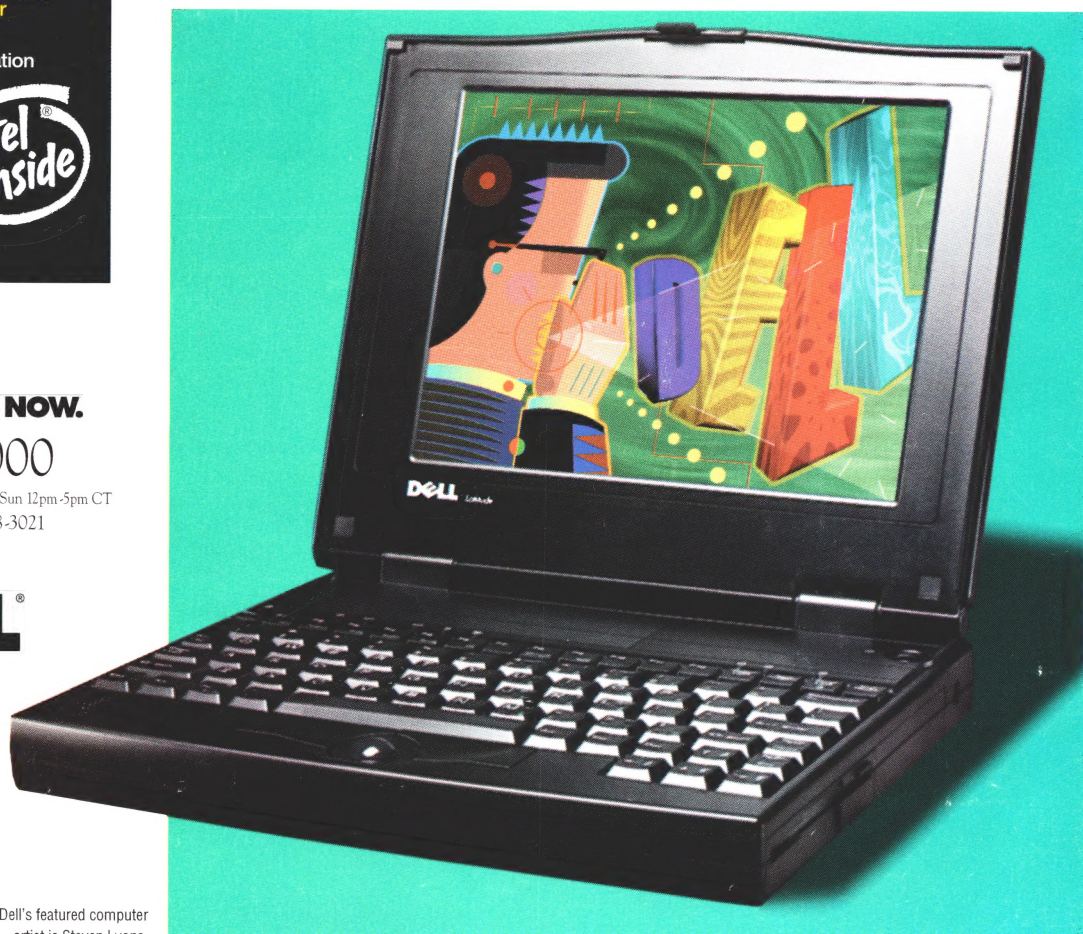
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